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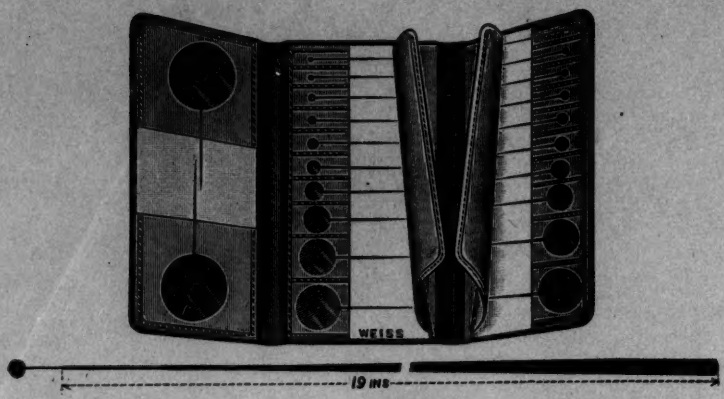

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THE BRITISH JOURNAL
OF
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MARCH, 1918

COMMUNICATIONS

CASES OF HAEMANGEIOMA OF THE PALPEBRAL CONJUNCTIVA FORMING PEDUNCULATED TUMOURS

BY

RUTSON JAMES, F.R.C.S.,

AND

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CONJUNCTIVAL haemangeiomas are usually met with on the globe, but during the past six years we have seen two cases arising from that part of the membrane which covers the posterior surface of the upper lid. The clinical histories are as follows:

Case 1.—H. M., a youth, 17 years of age, came to the ophthalmic department at St. George's Hospital on December 17, 1910, complaining that he had failed to pass the visual test for the Royal Navy. His vision was found to be defective in the right eye and normal in the left. For practical instruction a student was asked to evert the upper lid, when there came into view a dark-red flattened tumour of about the size of a pea, which arose apparently from the conjunctiva at about the middle of the lid, on a level with the upper border of the tarsus. The tumour was pedunculated, the peduncle being quite short, was flattened from before backwards and freely movable. Under cocain anaesthesia it was removed by a single snip with a pair of scissors. Haemorrhage was trifling in amount.

The boy made an uninterrupted recovery, and a week later was perfectly well. The pathological report was: The tumour is a pigmented naevus. One of us (R. J.) showed the slide of this specimen at the Ophthalmological Society in 1911 (*Trans. Ophthal. Soc.*, Vol. XXXI, p. 154). The late Mr. George Coats, who saw it, suggested that the pigment might possibly be blood pigment, derived from a previous haemorrhage into the growth, and recommended the staining of a second slide to see if Perls' iron reaction could be obtained. Unfortunately the block could not be found.

Case II.—L. K., a girl, aged 13, came to the ophthalmic department at St. George's Hospital on June 15, 1917, complaining of a lump under the left upper lid, which she had noticed for about three months. The case came in labelled "ruptured tarsal cyst," but on everting the lid, it was obvious that the lump was a pedunculated tumour, with a short narrow stalk; and, bearing in mind the previous case, the diagnosis of naevus of the conjunctiva was put forward. The tumour was of about the same size as that in the former case, was flattened from before backwards and was connected with the conjunctiva of the outer part of the lid, about half-way between the lid margin and the fornix. It presented a piebald appearance, parts of it being yellow and the other parts red. It was snipped off under cocain anaesthesia, and there was practically no haemorrhage. Three days later the wound was healed. The pathological report was: "The tumour is a simple naevus."

The term "naevus," used in the pathological reports on these two cases, has been applied to tumours of which the strictly correct description should be "Haemangeioma simplex." The term naevus is applied commonly to vascular tumours, without regard to their more intimate structure. It is generally agreed that a simple vascular naevus is a congenital malformation rather than a true neoplasm. The cases here described belong to the class of true blastomas, and consist of large endothelial cells arranged in many layers round spaces or tubules containing blood. In both cases the growths are slightly lobulated, the second case more so than the first. In both cases there is an irregular area of fibrous tissue round the periphery of the tumours, and in the second case this bears on the outside the patchy remains of a covering of several layers of flattened cells belonging to the palpebral conjunctival epithelium (see Figure). In the first case the epithelium has disappeared. The tumour from the first case has at some time become twisted on its pedicle, with the result that the tissue is partially necrotic and stains badly. The whole tumour is oedematous, and shows numerous interstitial haemorrhages, and at the same time is permeated with large cells crowded with brownish-yellow pigment. This pigment is probably the result of previous haemorrhages into the growth, but for the reasons given above this

statement could not be verified. The blood in some of the blood tubules has undergone thrombosis. The second case shows evidence of superficial ulceration, and at one such spot there is a thin covering layer of fibrin, which enmeshes numerous polymorphonuclear cells, and is undergoing organization.

Section from a lobule of the tumour from Case 2 × 200.

The structure of both the tumours is typical of a haemangeioma simplex. Neither of them could be regarded as a vascular fibroma or a very vascular polypus, which, as Fuchs maintains, have often been described as pedunculated angeiomata. Fuchs also states that primary angeiomata are rare, and are generally found in the region of the inner angle of the eye, whereas in our cases one was at about the middle of the lid and the other nearer the outer angle.

Tumours arising from the fornix conjunctivae, or palpebral conjunctiva, mostly become flattened from before backwards, and pedunculated; the former obviously from the pressure exerted by the lids on the globe, which prevents the growth expanding to any great extent in a fore and aft direction, the latter possibly from the same cause, but probably from the constant movement which is taking place, both of the globe and of the lid.

The cocks-comb growth of conjunctival tubercle is the best known example; it is possibly to be accounted for in the same way.

We have been surprised during a somewhat extensive search of

the ophthalmological literature on the subject of naevus of the conjunctiva and lid tumours, to find so few references to similar cases; even Wintersteiner in his paper on Conjunctival Naevus in the *Trans. Heidelberg Ophthal. Cong.* 1898, does not mention the fact that these growths occasionally arise from the palpebral conjunctiva and become pedunculated as they increase in size. A large number of lid naevi have been recorded, but they are all of the cavernous angeioma type, and involved the whole structure of the lid, for the most part showing through the skin surface as a bluish tumour.

References to pedunculated tumours of the conjunctiva in ophthalmic literature are few and far between; those that we have been able to find are as follows:

1. Talko in *Klin. Monatsbl. f. Augenheilk.*, 1873, quoted by the late Sir Jonathan Hutchinson in the *Royal London Ophthal. Hospital Reports*, Vol. VIII, p. 249, describes the case of a pedunculated tumour of the conjunctiva in a boy of 12, which was first noticed after an injury. This boy suffered from home treatment, for his mother wrenched the tumour off and on its growing again shortly afterwards, she passed a pig's bristle round the stalk and tied it. Finally Talko removed it. Histologically the tumour was composed of a stroma of connective tissue, enclosing small spindle-shaped cells. It was regarded as a small-celled fusiform sarcoma.

2. Elschnig in *Arch. f. Augenheilk.*, 1889, Vol. XIX, p. 63, in an article entitled "Ueber die polypenänlichen Geschwülste der Bindehaut," describes a somewhat similar case of fibromatous tumour in a lad of 17, and he has collected some twelve other cases, mainly of the nature of fibromatous polyps; but two, those of Rampoldi and Stepanini, are specially described as angeiomas, and occurred in middle-aged people of 50 and 53 respectively. Elschnig also devotes some space to a second group of hard fibrous tumours which were of the nature of sarcomata.

3. Erskine Henderson showed a similar case from Mr. Lang's clinic at the Royal London Ophthalmic Hospital before the Ophthalmological Society in 1906 (*Trans. Ophth. Soc.*, Vol. XXVI, p. 32). Histologically this was looked upon as an example probably of a leuko-sarcoma.

4. Hilbert, in the *Centralbl. f. Pract. Augenheilk.*, May, 1908, p. 139, has a somewhat similar case in a man of 20. Symptoms of conjunctivitis were present in this case, but no account of the histology of the tumour is given, though it was removed surgically.

PARINAUD'S CONJUNCTIVITIS

BY

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THE aetiology of this peculiar form of conjunctivitis, known by the name of the eminent French clinical master who was the first to describe and to classify the disease, has always excited the attention of workers in our speciality.

I propose to give here a brief statement of the researches that have been made at the Lariboisière Hospital, not that these researches have thrown any light on the nature of the infective agent in Parinaud's conjunctivitis, but rather with the view of putting forward a few facts which prove beyond discussion that Parinaud's conjunctivitis and tuberculous conjunctivitis, two diseases which have led to confusion in the mind of a few ophthalmologists, are distinct morbid entities, and in no way related to one another.

I shall first avail myself of this opportunity to bring to a clear understanding a point in the history of Parinaud's conjunctivitis. In the BRITISH JOURNAL OF OPHTHALMOLOGY, October, 1917, in an article about the death of Professor Goldzieher, I note this sentence: "He was probably the first to describe the affection now commonly known as Parinaud's conjunctivitis, etc. . . ." It is easy to show that the case of "Lymphoma of the Conjunctiva," published by Goldzieher in 1882, as well as the two other cases published by him in 1893, have no claim to the description of Parinaud's conjunctivitis, and should in no way be considered as identical with this disease. It is quite true that they have all a few clinical features in common; but when we come to the bacteriological and histological examinations, the difference, as regards the infective agent and the reactionary changes, becomes obvious. In a third paper, Goldzieher publishes the histological examination of his three cases, and we note that what he describes corresponds exactly to the follicular type of tuberculous conjunctivitis without ulceration. The presence of giant cells in the middle of infiltrated nodules is by itself a fact which justifies the elimination of these three cases from those described by Parinaud. Had Goldzieher gone further in his investigations, by practising inoculations on the guinea-pig, he would no doubt have convinced himself that he was going astray when he wrote, next to the heading of his third paper, "Conjonctivite de Parinaud" as synonymous with it. But, after all, from what I have said above, the histological examination alone is quite sufficient to differentiate between Parinaud's conjunctivitis and tuberculous conjunctivitis.

Parinaud was well acquainted with tuberculous conjunctivitis, and

he never failed to have inoculations made whenever he suspected the tuberculous nature of a lesion. In a series of cases published by his former pupils (Sanz, Chaillous, Morax) inoculations on guinea-pigs with a piece of conjunctival tissue, or of pus derived from infected glands, gave negative results, and, together with Chaillous, I have shown that the histological examination of the conjunctiva never revealed the presence of giant cells; whereas in tuberculous conjunctivitis the presence of these structures was constant. And so also was the positive result we obtained by inoculations on guinea-pigs with a piece of the conjunctiva or with pus, either subcutaneously or intra-peritoneally. I am quite aware of the fact that a differential diagnosis between Parinaud's conjunctivitis and tuberculous conjunctivitis, by their clinical features alone, is often a delicate procedure. The error is much the more common as it is customary to say that tuberculous conjunctivitis is always accompanied by ulcerations. Cases, however, where we fail to notice any ulceration are by no means exceptional, and these are precisely the cases that are mistaken for Parinaud's conjunctivitis. Quite recently I had to attend to a girl 15 years of age who had been brought to me by a colleague as an instance of Parinaud's conjunctivitis. I must admit that clinically the mistake was possible, and I reserved my diagnosis until I had made both the histological and the bacteriological (inoculation) examinations. The case proved to be one of tuberculous conjunctivitis.

It is always easy to cut out a small piece of the conjunctiva, half of which is used for inoculation and culture, and the remaining half for histological examination. If the histological examination shows giant cells, we have to deal either with a case of tuberculosis or with one of sporotrichosis. In the first case inoculation will clear up the diagnosis, and in the second, a culture on usual media will show the typical cultural characters of the fungus. If the slide does not show giant cells, the differential diagnosis will have to be made between Parinaud's conjunctivitis and specific disease. In such a case experimental inoculation will prove negative. Microscopical examination may or may not show the spirochaeta pallida, and even in cases of undoubted syphilis, we must say, it is not always possible to find the infective organism.

I have said above that inoculation of small pieces of the conjunctiva or of pus removed from the infected lymphatic glands in the neighbouring parts, did not produce any lesion if these had been derived from a case of true Parinaud's conjunctivitis. In a similar case all attempts to inoculate the guinea-pig had failed. We inserted a small piece of that conjunctiva in the subconjunctival tissues of a chimpanzee. Again we failed to produce the smallest lesion on that animal. The clinical evolution of the disease showed later that in this case we were not dealing with a tuberculous

affection in any of its clinical varieties, either attenuated, or even of the bovine type which Musy has tried to put forward.

It is a fact that we have not been fortunate enough up to now to discover the infective agent of Parinaud's disease. But this is not astonishing, so numerous are the diseases where the infective agents are still to be discovered, and we do not see why Parinaud's conjunctivitis and tuberculosis of the conjunctiva should be taken as one, just because they have a few clinical features in common. It would be more scientific, we think, to admit that the clinical features by themselves are not always sufficient to clear up differential diagnosis, and we should rather trust the experimental or histological examination whenever we meet with a conjunctival affection with involvement of the lymphatic glands. The diagnosis of Parinaud's conjunctivitis should be reserved for those cases where the absence of giant cells, and the negative result of inoculation and culture would justify the elimination of tuberculosis, sporotrichosis, etc., of the conjunctiva.

TRACHOMA IN THE STRAITS SETTLEMENTS

BY

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TRACHOMA is the most common and widespread of all the eye affections met with in this part of the world. As the result of twenty years' experience, I should say that the three main causes of blindness among the native population are in the order of their occurrence—trachoma, syphilis, and gonorrhoea, and of the three, trachoma is roughly responsible for 70 per cent. In addition, the amount of eye-maiming and disability short of blindness which it causes is enormous, and not realized. I should like in this paper to bring forward a few personal observations which may be of some interest, though I cannot claim any special originality for them.

Trachoma in the Straits is a disease of the towns, and not so much of the country. It is much more common among artizans, clerks, and the shopkeeping class than in agriculturalists or outdoor workers. There also appears on the surface to be a distinct race susceptibility: the great majority of cases met with are in Chinese. Among the Malay population the ratio of occurrence is very much smaller, and the same may be said of the Tamil or Kling, who come from India in their thousands to this prosperous colony. This great frequency of the disease among the Chinese living in a country

peopled by several distinct racial types, is certainly a strong argument in favour of racial predisposition. The undoubtedly favourable climatic conditions for the affection are shared equally. Social conditions are not very different, and as regards general physique, the Chinaman is superior to either the Malay or the Kling, yet the underfed, weakly Tamil does not get trachoma, while the sturdy, muscular, well-fed Chinaman does. An interesting fact, perhaps worth mentioning in this connection, is the well-marked tendency to the excess formation of lymphoid tissues in the Mongolian races. A hyperplasia of the follicular tissue of the eyelids may predispose to the development of the trachoma organism. Arguing from the other side against a special racial predisposition, a point of view which personally I am inclined to favour, there is unquestionably no individual or race which does so much to put himself in the way of infection as the Chinaman. He overcrowds to an appalling extent, and shares all things in common with his fellows in a way which no other race does, and I think all who know him will agree that the factor of a race predisposition to this disease in the Chinese is not really required. If there is any trachoma about he really cannot help getting it. The Malay and the Kling are more particular in their personal habits, especially the former.

As regard the age factor, the disease as met with in children is commonly of the typical granulation or sago-grain type of the text-books. It is extremely latent in its character, generally presenting few urgent symptoms, and is often overlooked unless another bacterial infection is superadded. I have seen in small infants a very serious fulminating type of the disease, resulting in corneal ulceration, subsequent opacities, and blindness. This type is probably due to an added gonococcal infection, though I was never able to find the gonococcus in the discharge, which is scanty. My experience has led me to believe that the initial infection of trachoma in the great majority of adult cases dates from early childhood, for I have never to my recollection seen primary infection in an adult Chinese over twenty, and marked changes with secondary infections have generally presented themselves before that date.

In regard to causation, my own opinion is that there is now sufficient reason to believe that the infecting microbe is the cell-inclusion body. This is regarded as a protozoal organism, and grouped with the chlamydozoa. It belongs to the class of filtrable viruses, and exists as fine granular bodies, which may be free in the vascular channels, or when taken up by cells cause as a reactionary result a so-called cell inclusion. A most interesting point is the finding of similar bodies in the cells in chronic vaginal and urethral catarrhs, and, to my mind, it seems probable that the original source of trachoma infection may be from such a cause.

The cell-inclusion bodies in trachoma are very rarely found in the advanced cases. They are much more commonly seen in the early stages of the disease in children.

I wish to point out also, as strongly supporting the cell-inclusion origin of this disease, the essentially chronic course of a case of pure trachoma. The common classification of trachoma into acute and chronic varieties is misleading and inaccurate. Trachoma is a chronic disease, and the acute manifestations so commonly seen are due to a mixed infection. To prove this, I have in the past made a large number of bacteriological examinations of the conjunctival sacs in cases of trachoma. I usually made cultures from the secretion on serum-agar or blood-agar. This is, in my experience, the most satisfactory method of investigating the bacteriology of eye conditions, as it is sometimes very difficult to demonstrate organisms in direct films. The preparations were stained in the usual routine manner by carbol-thionin and Gram's method. I found that in the advanced complicated cases of trachoma the commonest organism was the Morax bacillus. I found this often in a pure culture, especially where only a sub-acute inflammation existed. In the more acute conditions a mixed infection was more common—staphylococcus, Weeks' B. and occasionally gonococcus. Some cases presented a combined infection by all four—Morax B., Weeks B., staphylococcus, and gonococcus. The pneumococcus I never found as a secondary infection in trachomatous eyes. The infection by the gonococcus, curiously enough, very rarely gives rise in trachoma to the common acute destructive blennorrhoea. For some reason or other, the result of such an additional infection is generally sub-acute. The theory that the acute types of trachoma are not pure trachoma, but due to a mixed infection, was thus confirmed. Such a mixed infection is, of course, natural with the ocular tissues already damaged by the chronic devitalizing trachomatous growth and ensuing fibrosis.

The diagnosis of early trachoma is comparatively easy, but in the latter stages naturally must be often difficult. Complications must not be taken for the disease, and an important point to remember is that one is not justified in such cases in diagnosing a Morax or a Weeks infection from the mere presence of these organisms in the conjunctival discharge. The pathognomonic unmistakable signs of trachoma are, first, the typical pannus infiltration and vascularization of the cornea; second, hypertrophy and swelling of the retrotarsal fold of the upper lid; third, the subsequent fibrotic contraction of the conjunctival and adjacent tissues. This pathological tripod is peculiar to trachoma. In no other eye disease is there a similar combination of symptoms. On the other hand, one must avoid the fallacy in trachomatous districts of calling everything trachoma. For instance, pure Weeks's infections are

found fairly frequently presenting the form of a sub-acute conjunctivitis with a good deal of pus formation. An interesting condition is also that of a gonorrhoeal infection of a chronic nature producing a conjunctival catarrh which is generally longstanding and obstinate to treatment. I have mentioned the acute trachomatous condition in infants due to a mixed infection, but I have also seen cases of an acute infantile blennorrhoea of a non-gonorrhoeal nature with copious discharge leading every now and then to ulceration and corneal opacities. These may be instances of inclusion body blennorrhoea, but I have no microscopical proof to offer with regard to that.

In conclusion, trachoma, as I have met with it in the adult, is one of the most hopeless of all eye diseases to treat by the usual agents. However, before the pannus and degenerative changes have gone too far, I am fully convinced, that the best line of treatment is surgical, and consists in the complete excision of the retrotarsal fold of the upper lid and of its "cartilage," leaving simply a rim of "cartilage" at the lid margin. This is of course Heisrath's operation. I believe in a large number of cases this operation results in a more or less radical cure: certainly as regards any further progress of the disease to its inevitable goal—more or less complete destruction of the eye and its functions. In the primary stage general local treatment is more successful. This is the time when the "expression" of the nodule helps. Other methods of which I have experience of may be referred to briefly. I am a great believer in the persistent and steady use of the sulphate of copper stick, applying it daily with occasional breaks, but always remembering that where inflammatory and mixed infection conditions are present it acts as an irritant and does harm. This is the stage for other appropriate remedies, zinc sulphate, weak perchloride or bicyanide of mercury, or weak ointments of citrate of copper, and of course suitable sedative applications if there is much pain and iridic inflammation or irritability. Carbonic dioxide snow, Finsen rays, radium, and other cicatrising agents, I have seen give no better results than the much more easily applied and accessible sulphate of copper. In some of the very advanced and hopeless cases of corneal occlusion by opacities and pannus where no other treatment seems to make the least difference, patients often told me that they had received great benefit from sub-conjunctival injections. I generally used 1 to 3,000 of mercury oxycyanate along with acoin. The reaction was generally very marked, but it passed off completely in a few days. I have, at one time or the other, treated at least a hundred patients by this method. I never saw myself that an appreciable difference in the condition ensued, but the sufferers themselves were quite enthusiastic about it, and it is a method of which I should recommend a trial. It is quite

possible that it does improve in some way, not appreciable objectively, the internal nutrition of the eye structures. Peritomy I used to do often, but it never had any good effect. Optical iridectomies in this condition are practically never successful, and I have tried them frequently. There seems to be so much post-operative lymph-exudation following for one thing. Finally, trachoma is a disease which exists only as the result of the absence of the most elementary personal hygiene. If this is present there is no danger of the spread of the infection, and a certainty of its ultimate disappearance from the face of the globe.

THE MEDICO-LEGAL INTEREST OF A CASE OF BINOCULAR KERATITIS FOLLOWING UNIOCULAR INJURY*

BY

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CASES of uniocular keratitis following injury have been reported by various observers, but instances in which the second eye has become affected are not so common. In the literature at my disposal I have only been able to find records of such a condition by Ohm, Asmus, and H. Work Dodd (three cases). Owing to the medico-legal interest of the subject I venture to bring the following case to the notice of the Congress :—

H. D. J., marine engineer, aged 25, of good family and personal history, was struck on the outside of the left eye by a piece of steel on November 2, 1915. He reported the accident to the second engineer, but nothing was found in the eye. He was treated by the captain until he reached Savona six days later, where he was treated by an Italian oculist, who said he would try to keep the right eye safe and that it had either come on from disease or from a blow on the eye. He went with his ship to Baltimore, U.S.A.—where he was again under the care of an ophthalmic surgeon—St. John, New Brunswick, Plymouth, Calais, and Cardiff, where he was discharged. He came to my out-patient department at the Royal Gwent Hospital on March 6, 1916, when I found the right eye healthy and opacities in the left cornea evidently the result of keratitis. His vision then was right eye 6/18 —3.5D. cyl. axis 15° 6/9; left eye 6/36 —0.75D. sph. — 5D. cyl. axis 165° 6/36. There was a deep-seated central cloud in the cornea with residual vessels in the left eye. The right eye was healthy.

* A communication to the Oxford Ophthalmological Congress, July, 1917.

On May 4, 1916, he went as third engineer on the s.s. *Falcon*. His eyes were good except that there was a mist over the left until May 20, when the right suddenly became inflamed. On his return home he was sent to me for examination by his employers on June 2, 1916, when I found a keratitis resembling interstitial keratitis in his right eye, the vision of which was reduced to counting fingers at half a metre. He has been under my care since then, and the case has run the ordinary course of a mild interstitial keratitis. The eye is now free from inflammation, but there is still a central corneal opacity with some deep vessels. Its vision is only 1/60. The condition of the left eye is unaltered. The Wassermann reaction is negative. There is no clinical evidence of syphilis or tuberculosis.

In December, 1916, the man brought an action for compensation in the Newport County Court, and was awarded £1 per week.

The first question which arises in discussing this case is whether there ever was an injury. In the absence of early medical examination this must depend largely on the man's own statement; but the fact that he reported it to the second engineer, and that his employers had to admit it in a court of law, tend to corroborate his story.

The next question is whether the accident caused the keratitis in the left eye or was merely a coincidence; but in view of the fact that such a sequence is not uncommon, it seems that the injury probably started the inflammation.

When we come to consider the connection between the accident and the inflammation in the second eye, we are faced by a more difficult question. If the injury merely started an inflammation in the first eye, which would in any case have broken out sooner or later, it is difficult to see how it can be regarded as causal for the second eye. On the other hand, if it gave rise to an inflammation which would otherwise not have occurred, and this in turn spread to the second eye, this suggests that in ordinary non-traumatic interstitial keratitis the inflammation in the first eye may cause, as well as precede, the trouble in the second eye, and that there are analogies between interstitial keratitis and sympathetic inflammation which may be worth study.

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TRANSLATION

Weekers, L. and Firket, J.—Ocular manifestations of spirochaetosis ictero-haemorrhagica. (Les manifestations oculaires de la spirochétose ictéro-hemorragique.*)

The study of spirochaetosis ictero-haemorrhagica is of recent date; nearly all that has been written thereon has appeared during the war. The conditions of life at the front are favourable to its development, hence its comparative frequency among the troops. It may really be labelled a war disease, and as such has a special interest for members of Army Medical Services.

The earliest description of the disease in the French Army was given by Martin and Pettit in October, 1916. In August, 1916, it appeared in the Belgian Army. Its occurrence in an epidemic form has been noted on all fronts, among our enemies and among our allies.

While there have been numerous published descriptions of the general features of this disease, its ocular manifestations, although noted by most writers, have not been dealt with in detail. The present article endeavours to make good this omission.

In all probability few ophthalmologists have had an opportunity of seeing a large number of cases of this malady, and hence no systematic description of the ocular symptoms has been published.

It will not be without interest to begin with a brief sketch of the general features of the disease.

Towards the end of 1914 certain Japanese writers (Inadu, Ido, etc.) described as the specific cause of the disease, a spirochaete, morphologically allied to the spirochaete of syphilis; their investigations were made among coal miners. They proposed to call the aflection caused by this micro-organism spirochaetosis ictero-haemorrhagica, a name which has the advantage of indicating not only the aetiology, but also two of the chief symptoms of the disease.

This discovery by the Japanese scientists threw much needed light upon the obscurity surrounding primary infective jaundice. As a matter of fact, the malady now described under the term spirochaetosis ictero-haemorrhagica had been identified by its clinical symptoms, before the war and before the discovery of the specific micro-organism.

In France it had been described as "Relapsing Febrile Jaundice of Mathieu," or as "Hepatic Typhus" (Landouzy). English and German writers called it "Weil's disease." But the many clinical forms of infective jaundice and still more the ignorance of the cause, rendered it impossible to consider the disease a definite pathological entity such as we now know it to be.

* Abridged from *Arch. d'Ophtal.*, Sept.-Oct., 1917.

This disease does not conform to one type; it is polymorphous, and its gravity especially is very variable. Certain symptoms, however, are almost always present, and hence a positive diagnosis can generally be made. The most usual clinical type is the following:

The disease, rapid in its onset, attacks those in perfect health; the symptoms are shivering, headache, violent muscular pains, especially in the neck, the lumbar region and flanks, the posterior surface of the thighs and legs; hyperaesthesia of skin; pain on movement of the eyeballs. The temperature rises rapidly to 39° or 40° Cent. and remains there for five or six days. During this period the patient is much prostrated; the pulse is feeble but not very rapid; arterial pressure is lowered.

In addition there may be labial or nasal herpes, frequent epistaxis, moderate bronchitis with blood-stained sputum; a dry coated tongue and recurrent bilious vomiting. The stools are soft and coloured, diarrhoea is seldom noted. The liver and spleen show slight enlargement. The urine contains a trace of albumin, abundant urobilin, and some blood.

On the fourth or fifth day icterus develops, in some instances slightly, in others intensely.

Shortly after the onset of jaundice, the temperature drops to normal or thereabouts (sixth to ninth day). The patient's general condition improves, the pulse becomes stronger, the arterial pressure normal; vomiting and haemorrhage cease, and the muscular pains become less severe. The urine remains abnormal and contains in addition biliary pigment. But the end is not yet. After five or six days of apyrexia (usually about the twelfth to thirteenth day of disease) the temperature often rises, reaching, perhaps, 40°, and showing marked daily oscillations. This febrile relapse is accompanied by aggravation of the general symptoms, but at its termination rapid improvement is noticeable. During this recrudescence of fever the jaundice fades and disappears.

Subsequently, the asthenia and anorexia and the pain disappear, but convalescence is slow, and pallor, after the jaundice has faded, is very noticeable.

Cardiac failure is not uncommon. The mortality varies from 4 to 8 per cent.

In cases without characteristic clinical symptoms, the diagnosis can be made with certainty by the discovery of the causal agent in (1) the blood, (2) the fresh urine, centifugalized. If the blood of the patient be injected into a guinea-pig, the disease is conveyed to the animal which dies in eight days; it is to be noted, however, that the blood is virulent only during the first seven days of the disease, and not after the jaundice has disappeared; also that the spirochaete cannot be found in the urine before the tenth day.

Redness of the eyes occurs very frequently in spirochaetosis ictero-haemorrhagica and is very obvious; it has been noted by most writers, but its significance has not been recognized.

The Belgian authors, Wilmaers and Renaux, in their work on this disease say, "The conjunctival congestion which is sometimes present in catarrhal jaundice is much more frequent and intense in the spirochaetal form — we have found it in 27 of our 47 cases, and it may have been present in a larger number, and have disappeared when the patient reached hospital. It is a transient symptom and seldom lasts longer than a week.

The French authors, Garnier and Reilly, Martin and Pettit, Costa and Troisier, Sacquepée and Boidin, all refer to congestion of the conjunctivae, and some of them consider the symptom of value in the diagnosis of doubtful cases.

Bloch and Hebert observed in two cases of pseudo-meningitic type an intense congestion of the conjunctiva accompanied by such severe pain that the least movement of the eyeballs was intolerable. This hyperaemia appeared at an early period of the disease and was persistent.

Stokes, Ryle, and Tytler, whose observations were very detailed and complete, did not dwell upon the ocular symptoms; they noted ocular pain and injected conjunctivae, and in two cases, subconjunctival haemorrhage.

A large number of cases of this disease has been recorded in the Italian Army; but the medical reports of cases by various writers contain no reference to ocular complications other than conjunctival congestion occurring as an early symptom.

In German literature at our disposal we have found but one note, in an article by Wessely, concerning ocular complications in war maladies: "in Weil's disease conjunctival haemorrhage has been frequently, and orbital haemorrhage rarely, noted."

Briefly it may be stated that all writers have reported the occurrence of conjunctival injection during the course of spirochaetosis ictero-haemorrhagica. In our view, this conjunctival injection is secondary, and coincides with a condition of greater importance, viz:—ciliary congestion; this latter symptom is significant as indicating a localization of the disease (probably of the spirochaetes) in the uveal tract.

We have examined systematically, as far as circumstances have permitted, a number of cases of this disease. Our experience has shown that the ocular symptoms met with in the course of the malady are numerous and diverse. They include: simple hyperaemia of the anterior segment of the eyeball; congestion of the iris, iritis with exudation, sometimes forming synechiae; optic neuritis;

retro-ocular neuritis; ocular herpes with corneal lesions; conjunctival jaundice with blood extravasation beneath the conjunctiva, noted by the first observers.

In 50 cases of spirochaetosis ictero-haemorrhagica under our observation, these symptoms were present in the following proportion (omitting sub-conjunctival haemorrhage) :—

Cases without ocular manifestations	4
Simple hyperaemia of anterior segment	29
Congestion of iris	7
Iritis	6
Iritis and optic neuritis	2
Iritis and retro-ocular neuritis	1
Ocular herpes	1
	50

Ocular Hyperaemia.—This is an early sign appearing at the onset of the affection or during the first few days; it is rarely absent, and was noted in 46 out of 50 cases. It has, therefore, a certain diagnostic value.

It varies greatly in degree; when slight it may be little more than is often present in health, but in more severe cases there is intense injection of the anterior part of the globe, accompanied by severe photophobia and lacrymation, and occasionally by redness of the eyelids.

Subjective symptoms, as a rule, are but slight; occasionally, no discomfort is complained of, but generally a pricking sensation and tenderness on pressure are noted and not infrequently there is pain on movement of the eyeballs.

On careful examination it will be found that hyperaemia involves both the conjunctival and ciliary vascular systems, the latter evidenced by a more or less pronounced circumcorneal capillary injection.

The congestion extends all over the anterior segment of the eyeball; frequently it spreads to the inferior palpebral conjunctiva, the superior being almost always unaffected. Moderate lacrymation is the rule, but there is seldom a trace of conjunctival secretion.

During this early stage of hyperaemia, no other abnormal conditions are present in the eyes. The media are clear, the vision is unimpaired, the pupils are equal and react normally. The iris is free from visible lesion.

The evolution of this hyperaemia is noteworthy, and runs a course nearly parallel to that of the general symptoms. Appearing at the onset, or very early in the disease, it persists in the same degree for several days, then rapidly abates, but seldom disappears entirely until convalescence is established.

About the twelfth or fifteenth day, the date of the usual relapse, characterized by a fresh rise in the temperature, a recrudescence of the ocular hyperaemia commonly occurs. At other times during the persistence of this symptom, there may be numerous variations in its intensity, usually dissipated by the application of atropin drops.

Congestion of the iris.—Simple hyperaemia of the anterior segment of the globe may, in certain cases, give place to congestion of the iris. This often coincides with recurrent fever, but we have noted it apart from this symptom; sometimes it is rather a late incident. In addition to the ciliary and circumcorneal injection, its presence is indicated by contraction of the pupil. In the disease under discussion the congestion is unaccompanied by recognizable change in the tissue of the iris, and disappears without leaving any trace, even when untreated.

There is usually bilateral miosis, often unequal in degree. The pupils dilate to atropin more slowly than in health, but attain full dilatation. No trace of exudation is found on close examination.

Iritis and irido-cyclitis.—In a certain proportion of cases (nine out of fifty in our list) iritis develops; it is characterized by the presence of exudation and the formation of posterior synechiae, and accompanied by well marked symptoms. These symptoms vary in degree; although generally prominent, they occasionally pass off speedily and spontaneously, and for this reason have sometimes escaped the observation of earlier writers. Exceptionally the formation of synechiae is so extensive as to constitute a real danger to the eye. Irido-cyclitis has been observed. Under local treatment by atropin the lesions of the iris and the inflammatory symptoms pass off in a few days. In most instances the application of atropin breaks down the synechiae and leads to full dilatation of the pupil: it is then seen that a fairly abundant exudation has been deposited on the anterior capsule of the lens over the area previously covered by the iris. The front surface of the iris, examined by focal illumination, seldom shows any noticeable change. The fundus oculi remains normal.

Later examinations prove that the deposit on the lens capsule undergoes a slow but usually complete absorption.

The clinical signs described above, hyperaemia of the anterior segment, congestion and inflammation of the iris, are probably manifestations, in varying degree, of the local devolopment of spirochaetosis in the uveal tract, and result from the circulation of the spirochaete in the bloodstream.

The micro-organism has been found in the renal and hepatic tissue; it is therefore not surprising that it should become localized in a richly vascular structure such as the uvea.

It is clear that ocular hyperaemia, so easy to detect and so frequent

in this disease, should not be overlooked by the medical man. Although the congestion, and even actual iritis, may disappear spontaneously in the absence of treatment, a severe and dangerous iritis may develop and hence, except in the slighest cases, atropin should be systematically employed.

Optic Neuritis.—In two cases we have observed optic neuritis, bilateral but unequal in the two eyes. The papillae were congested, and their outlines lost; the retinal veins dilated and tortuous for a short distance beyond the discs. There was some loss of visual acuity, but no limitation of the field and no central scotoma. Complete and fairly rapid recovery, with full integrity of ocular functions ensued. How is this neuritis to be explained?

During the first two days of the disease weakness and headache are two almost constant symptoms. Occasionally this stage is marked by great restlessness and delirium suggestive of meningitis.

Cost and Troisier have demonstrated the presence of spirochaetes in the cerebro-spinal fluid and have induced jaundice in the guinea-pig by the injection of cerebro-spinal fluid from patients from the fifth to the seventh day of the disease.

The cerebro-spinal fluid reaches the sheath space of the optic nerves. It is not surprising, therefore, that the presence of spirochaetes in the fluid should set up changes in the nerve, which give the ophthalmoscopic appearances of a benign optic neuritis, such as we have noted.

Retro-bulbar Neuritis.—A single case under our observation suggests that spirochaetosis ictero-haemorrhagica may cause retro-bulbar neuritis. In one patient we noted a transient failure of sight with central scotoma, but without ophthalmoscopic changes. This was probably a form of retro-bulbar neuritis attacking the papillo-macular bundle of fibres. Full recovery of vision ensued in our patient in the course of a few days.

Ocular Herpes.—Facial herpes is often seen as an early symptom in spirochaetosis (in 20 per cent. of our cases). It occurs most commonly on the lips and the alae of the nose, and exceptionally on the lobe of ear. As an ocular lesion it is apparently very rare; we have observed it in only one case, and believe it has not previously been noted. In our patient the eruption involved the cornea and conjunctiva, as well as the eyelids. It is a complication deserving attention, as it may lead to permanent damage to sight.

Conjunctival jaundice and sub-conjunctival blood extravasation.—The two symptoms have no special significance by reason of their localization. The jaundiced condition of the conjunctiva may be present without other ocular manifestations of the disease or it may co-exist with the usual hyperaemia or with iritis. It produces no subjective symptoms.

Blood extravasations beneath the conjunctiva have been infrequent

among our cases; we have seen them in only 3 patients. In each instance they occurred in both eyes, chiefly towards the internal and external canthi. The blood appeared to be deeply situated, rather in the episcleral than the sub-conjunctival tissue. In no case have we discovered evidence of orbital or intra-ocular haemorrhage.

The authors conclude this interesting communication by clinical notes of five selected cases, in two of which charts of the temperature and pulse rate are given. The ocular lesions in these five cases were: Case 1, irido-cyclitis; case 2, iritis; case 3, iritis and optic neuritis; case 4, iritis and retro-ocular neuritis; case 5, ocular herpes.

A list of recent literature on spirochaetosis ictero-haemorrhagica is appended.

J. B. LAWFORD.

ANNOTATIONS

Qualifications in Ophthalmic Surgery

THERE is now a more or less general feeling amongst ophthalmic surgeons that there should be some degree or qualification commensurate with the position which they hold in the profession.

The present system of education of an ophthalmic surgeon ensures a general knowledge of surgical principles and pathology, but does not necessarily ensure a knowledge of ophthalmic surgery, the science and art in which he is subsequently going to practise. For example, a young man decides that he will practise as an ophthalmic surgeon in the metropolis. After spending at least five years in qualifying, he has to obtain his F.R.C.S. (England), as this is the only qualification which will entitle him to become a candidate for practically any special or general hospital in London. The same qualification is also required in many of the big provincial centres. It will take him an additional one or two years to accomplish this, so that, having spent seven years upon his medical education he will have to start his ophthalmic training which, it is generally recognized, should comprise at least two years' work at a special hospital. It will, therefore, be some eight or nine years at least before he is fit to practise as an ophthalmic surgeon.

During his first seven years there is little to stimulate the student to do ophthalmic work, and he is not likely to do more than the very meagre minimum of three months' attendance in the ophthalmic out-patient department of a general hospital. This attendance is often of a perfunctory nature, nor is it likely that there will be any alteration in this respect until ophthalmology becomes a recognized part of the qualifying examinations of Great Britain as it already is in Ireland.

Ophthalmology has now become such a large and highly specialized subject, and from an operative point of view so purely limited by the confines of the orbit that it is not necessary for a man who is going to practise in this subject to have more than a sound general knowledge of surgical principles and it would be more directly useful to the future ophthalmologist if the time which he now devotes to the higher examinations in surgery, such as the final F.R.C.S., and M.S. (Lond.) were given to the study of ophthalmology, and an examination in that subject in part substituted for it. Indeed, at the present time, the Examining Board of the Royal College of Surgeons does not often ask ophthalmic questions in its examination, as there are no ophthalmic surgeons on the Boards of either the membership or fellowship examinations; a curious anomaly, since ophthalmic surgeons look on the latter diploma as essential for the appointment to the staffs of ophthalmic hospitals in London.

The demand for a qualification in ophthalmology has manifested itself in America by the establishment of an American Board of Ophthalmic Examiners appointed by the Joint Councils of the American Ophthalmological Society, and the American Academy of Ophthalmology and Oto-laryngology and the Ophthalmic Section of the American Medical Association. Recently a Fellowship of the American College of Surgeons has been established, and there have been applicants who have claimed eligibility upon the ground of their having knowledge in ophthalmic work. The Ophthalmic Board have entered into negotiations with the authority of the College which agreed to leave the Board in control of all ophthalmic examinations of such candidates.

The desire amongst ophthalmic surgeons in America for this qualification may be gathered from the fact that there are now several hundred applicants awaiting examination in ophthalmology to determine their fitness for the Fellowship of the College.

In Scotland the regulations for the Fellowship of the Royal College of Surgeons of Edinburgh allow of a special subject to be taken in the final examination and ophthalmology is one of them.

In England a diploma in ophthalmology has been established at Oxford, but this involves attendance on the University courses. A similar diploma has also been instituted at Liverpool. In London the only strictly ophthalmic examinations which are held are for a special Certificate at the Royal London Ophthalmic and Central London Ophthalmic Hospitals. It would be far better if some examining body, such as the Royal College of Surgeons or the London University, would institute an examination for a Fellowship or Mastership of Surgery in this subject, rather than allow a number of subsidiary examinations to spring up.

The establishment of such an examination would have far-reaching consequences. First, it would allow the time which is

now spent by the student in learning regional surgery to be devoted to his own speciality. Second, it would ensure that an ophthalmic student had some knowledge of his own subject. Third, it would improve the teaching of the subject in the medical schools attached to the ophthalmic hospitals. Fourth, far more time and attention would be devoted by the student to the study of the special pathology and bacteriology of his subject and more original work would be produced. Further, departments for the teaching of optics and the study of the psychology of vision and other allied subjects which are now almost entirely neglected might well be introduced, and general advancement in the knowledge of ophthalmology would thus result.

We do not propose at present to suggest the details of such an examination, but in the case of the Royal College of Surgeons we have a precedent in the case of the examinations in dentistry. It is clear that a far higher knowledge of general surgery and pathology is required by the ophthalmic surgeon than by the dentist, and that the qualifying examination, the first fellowship, and that part of the final relating to general surgical principles and pathology should be retained, and a special paper and a *viva voce* in ophthalmology, both clinical and operative, should be substituted for regional surgery. Following the precedent of the dental examination special examiners in ophthalmology should be appointed together with a number of assessors from the Court of Examiners so that the standard of the examination may be kept up.

As these ophthalmic examiners would probably not occupy a seat on the Council of the College, the American precedent might be followed; that is to say, the Council of the College might ask a joint committee of the Ophthalmological Society of the United Kingdom and the Ophthalmic Section of the Royal Society of Medicine to nominate examiners, or some such standing committee of ophthalmologists as was suggested in this Journal last year (p. 678).

We are sure it will be agreed by all who have studied this subject that some such scheme as the above would be advantageous both to the profession and the general public.

The Welfare of the Blind

By the courtesy of Mr. N. Bishop Harman, some interesting correspondence has reached us dealing with the action taken by the British Medical Association to secure the appointment of ophthalmic surgeons upon the English Advisory Committee of the Local Government Board on the Welfare of the Blind. In view of the fact that the Local Government Board had failed to include any medical practitioner on the Committee, it appears that in December

last the Association asked Sir Watson Cheyne to take the matter up in the House of Commons. In accordance with this request, Sir Watson Cheyne put down a question for answer on January 12, but in the meantime had an interview with Mr. W. Hayes Fisher, President of the Local Government Board, in the course of which the latter is reported to have said that he would add ophthalmic surgeons to the Committee, but that there was very little medical work to do. As an alternative, Mr. Fisher suggested the formation of a small committee or sub-committee of ophthalmic surgeons to which everything medical should be referred. On Sir Watson Cheyne pointing out that there might be something which the main Committee did not recognize as medical, Mr. Fisher added that he would furnish the chairman of the sub-committee with the agenda of the larger body in sufficient time to enable him to judge if any medical point was involved, and to allow of the sub-committee considering such point, and, if necessary, making representations thereon to the main Committee. Sir Watson Cheyne enquired whether this concession would meet the views of the Association, but the Association came to the conclusion that Mr. Fisher's suggestion would not meet in any way the feelings of ophthalmic surgeons. In consequence of this expression of opinion, Sir Watson Cheyne asked in the House of Commons, on February 5, 1918, whether the President of the Local Government Board had considered the question of adding one or more ophthalmic surgeons to the Committee on the Welfare of the Blind, and whether he was willing to do so. To this the President replied :—" In view of the great demands upon the time of ophthalmic surgeons, it appeared to me that their advice and assistance could be most conveniently secured otherwise than by nomination of a representative upon the Advisory Committee, much of whose time will be occupied with purely administrative problems. I am, however, willing to invite an ophthalmic surgeon to serve on the Committee, if it is desired, and I am communicating with the Royal Society of Medicine in the matter." Meanwhile the soundness of the demand of English ophthalmic surgeons for direct representation is shown by the fact that the name of our Edinburgh colleague, Dr. George Mackay, has been included on the Committee for the Welfare of the Blind appointed for Scotland, the other members of which are: Sir David Paulin (Chairman), Mr. J. Frew Bryden, the Rev. Thomas Burns, Mr. Alexander Butters, Mr. W. C. Long, Mr. C. G. Lothian, Miss Isabella Lyall, Major William Reid (Vice-Chairman), Mr. Thomas Stoddart, and Mr. W. M. Stone. Mr. J. B. B. Brown, of the Local Government Board for Scotland, is the Secretary of the Committee.

The British Medical Association, in approaching Sir Watson Cheyne with a view to action in the House of Commons, furnished him with the memorandum printed in full below:

MEMORANDUM ON THE LOCAL GOVERNMENT BOARD COMMITTEE ON THE CARE OF THE BLIND

1. During the past twenty years increasing attention has been given to the condition of the blind. This interest had its origin in endeavours made by the medical profession to prevent the occurrence of certain forms of blindness—notably blindness due to ophthalmia neonatorum and industrial accidents. Attention was drawn to the economic disabilities of the blind, which led to a demand for better and extended provision for training blind persons; and for meeting their inevitable economic handicap as workers by monetary aid apart from charitable doles. A private Bill was mooted to bring these aims into effect. Whereupon the L. G. B. appointed a Departmental Committee of Enquiry to report on the whole subject of the welfare of the blind.

2. In the work of this Committee of Enquiry a primary difficulty arose in defining blindness. On a request to the Royal Society of Medicine a Committee was appointed by the Ophthalmological Section. The report thereupon formulated was accepted by the Departmental Committee of Enquiry, and is incorporated in the report of that Committee.

3. Following the receipt of the report of the Committee of Enquiry, the President of the L. G. B. has now announced the formation of a Committee to advise his department upon all matters relating to the care of the blind. The members of that Committee number 15, with an official secretary. None of the members are medical men.

4. If a survey be made of modern progress in the prevention and treatment of blindness, and of measures aiming at the alleviation of the unhappy lot of the blind by the invention of modes of writing and reading, the teaching of trades, or the formation of benevolent societies and institutions, there will be found one outstanding feature: that the initiative and carrying into effect of these measures for the help of the blind has with rare exceptions been due to the activities of ophthalmic surgeons.

5. The experience of the past urges the importance of the presence of ophthalmic surgeons on the new Advisory Committee of the L. G. B., if its work is to be effective. The experience of nearer years—the defining of blindness—shows the necessity for the continued advice of ophthalmic surgeons; for the application of any definition of blindness must vary with varying economic conditions.

6. The Report of the Departmental Enquiry shows how greatly medical matters affect administration, for though the enquiry was directed to the care of the blind only, the report included within its pages recommendations on the prevention of blindness.

7. Throughout the country, wherever there are blind persons, whether as individuals or in institutions, it will be found that ophthalmic surgeons are the persons to whom application is made for advice and direction, both on the character and disabilities arising produced by the blindness, and the possibilities of training and employing blind persons. The ophthalmic surgeon is therefore not only in daily contact with the blind, but his knowledge is found to be essential to determining the best work for the blind.

8. In a Central Advisory Committee the same adjuvant action of medical and lay advisors will be needed if the advice is to have such a basis as is likely to bring successful action. Matters will arise that will turn upon some medical point. If there be no medical practitioner on the committee, delay will arise until the medical point is settled, or, failing this, the advice tendered by the Committee will be incomplete or possibly injurious. Further, to obtain the most satisfactory medical evidence or opinion on such matters as arise, it is desirable that the medical advisers should be constantly informed of the administrative position, and this can only be done by the constant association of the medical advisers with the work of the Committee.

ABSTRACTS

I. COLOUR-SENSE PHENOMENA

Berry, Sir George (Edinburgh). — Colour-sense phenomena and some inferences which they seem to suggest. The Bowman Lecture. *Trans. Ophthal. Soc. of the U.K.*, p. 5, Vol. XXXVII, 1917.

Sir George Berry had originally intended to devote the Bowman Lecture to the consideration of war injuries of the eye; but, after consultation with the president of the Ophthalmological Society, decided to choose a subject of wider scientific interest. To the unmathematical mind, the value of mathematical formulae is not readily appreciated at its true value; nevertheless, it is a mere truism to say that nearly all the most important discoveries in physical science owe their origin to the working out of mathematical problems. In his present lecture Berry endeavours to introduce into the discussion of a subject on which there has been too much loose writing the more definite methods of the mathematician. To follow his chain of reasoning in the brief space of this notice would be fair to neither the author nor the reader; it must be read in the original.

Berry's conclusions are as follows:

"The chain of events leading to colour perception may be taken to be something like the following:

1. Photo-chemical action of rays on the contents of the retinal pigment-cells, possibly combined with more direct light on the retinal cones. Thereby,
2. Stimulation of a dual nature of the cones.
3. Nerve current conduction from the double cone stimulation by the optic nerve to
4. Central visual cells, in which the combination of the two factors causes different molecular disturbances, which are
5. Psychically resolved into neutral and coloured sensations.

Further conclusions that may be drawn from the facts and considerations which have been incidentally or more fully referred to are:

1. That the existence of fundamental colour sensation is improbable.
2. That the transition from polychromatism to dichromatism is more easily explained than on the assumption of a lost or crippled fundamental sensation.
3. That physiological and congenital dichromatism are essentially the same in causation.
4. That the molecular disturbances in the central visual cells are the same whether evoked by physical stimuli or originating subjectively.
5. That there is a constant interaction taking place between the molecular movements in these cells in contiguous areas, an interaction known as induction, which seems to be independent of the manner in which the disturbances are evoked.
6. That the relation between neutral and coloured light perception, though intimate, is not inseparable.
7. That the retinal rods and the visual purple are probably unconnected with colour sensation.
8. That the psychical processes evoked by molecular changes in the visual centre are subject to other psychical conditions, which may falsify judgment."

E. E. H.

II.—INJURIES OF THE OPTIC NERVE

Tresling (Groningen).—Clinical communications on injuries of the optic nerve. (Kasuistische Mitteilungen über Verletzungen des Sehnerven.) *Klin. Monatsbl. f. Augenheilk.*, February-March, 1915, p. 188.

Tresling discusses two cases of "contralateral injury of the optic nerves" *(Kontralateraler Sehnervenverletzung)*. In the first case a blow with a knife had caused an injury to the eyelids and anterior segment of the left eye. The knife had not penetrated the orbit. Vision=0. On the opposite side there were proptosis, ptosis, immobility of the eyeball, subconjunctival haemorrhage, corneal anaesthesia, and dilation with fixation of the pupil. The optic disc was blurred, and the retinal veins were distended. Six months afterwards there was still some limitation of movement of the right eye with anaesthesia of the cornea. The optic disc was atrophic. The left eyeball was shrunken. Bilateral amaurosis.

The author believes that a fracture of the base had occurred extending through the apex of the right orbit, although there was no trace of severe violence on the left side where the force had been applied. A radiograph gave no help.

In the second case a knife-stab had been inflicted below the left eye. The right eye was in practically the same condition as in the first case. Vision=0. The wound passed towards the nose. A radiograph showed a large knife-blade in the base of the skull extending from the neighbourhood of the left malar bone to the apex of the right orbit near the optic foramen. The blade proved to be nine centimetres in length, and had been for twenty days in its position without causing any noticeable re-action. The left eye was uninjured.

H. M. TRAQUAIR.

III.—ICTERO-HAEMORRHAGIC SPIROCHAETOSIS

(1) **Hertel, E. (Strasburg).—On eye symptoms in Weil's disease.** **(Ueber die Augensymptome bei der Weilschen Krankheit.)**
Arch. f. Ophthal., Vol. XCIV, Part i, 26 September, 1917.

(1) The symptoms shown by the eyes in ictero-hæmorrhagic spirochaetosis include yellow colour of the scleral conjunctiva, and sometimes also of cornea and papilla; haemorrhages in eyelids, conjunctiva, orbit, eyeball, muscles, and nerves.

In the eyeball the vessels are overfilled and blood may be found in retina, ciliary body, etc. As inflammations are found conjunctivitis iritis (with or without hypopyon), and exudation into the vitreous body. These alterations may subside, or panophthalmitis may ensue.

In cases of icterus febrilis, Uhlenhuth and Fromme found spirochaetes to be the cause of the disease. Now **Hertel** has experimented on animals with spirochaetal material in Uhlenhuth's laboratory.

Hertel experimented on thirty-eight animals (marmots and rabbits), the peritoneum or eye of which he injected with material from marmots dead of icterus febrilis. The result was that intra-peritoneal and intra-ocular infection with Uhlenhuth and Fromme's spirochaete was found to produce in marmots and rabbits the symptoms of Weil's disease: icterus, haemorrhages, and inflammatory changes, just as in human patients suffering from icterus febrilis.

The experiments on animals allow us to study the various changes in the eyes in their different stages. After intra-peritoneal injection, Hertel saw, on the fourth or the fifth day, irritation of the conjunctiva, and two or three days later a yellow colour of the scleral conjunctiva; haemorrhages, iritis, opacities in aqueous and vitreous humours were seen in the course of the infection. In the fundus oculi, on the contrary, no typical changes were observed. Death supervened in seven to nine days.

Inoculation of the anterior chamber causes the same symptoms and opacity of the cornea. Death in nine or ten days. Inoculation of the vitreous causes an abscess and similar symptoms. Death in eight days.

At the autopsy were found typical changes in lungs, liver, kidneys, etc., independent of the way in which the septic material was introduced. The only difference is that in intra-ocular injection, the eye symptoms are more severe, although of the same kind as in intra-peritoneal injections. Spirochaetes were found in all livers from intra-peritoneally injected animals, and also in those of animals which died of general infection after intra-ocular inoculation. Until now, Uhlenhuth-Fromme's spirochaetes have never been found in the organs of rabbits. The conjunctival secretion contained spirochaetes from the third day. Intra-ocular or intra-peritoneal inoculation of other marmots with the conjunctival secretion killed them in seven to nine days.

In microscopical sections of parts of the eye, spirochaetes were often, but not always, found in marmots after intra-peritoneal inoculation; always after intra-ocular inoculation. The spirochaetes were in the conjunctiva, uvea, retina, and optic nerve. When the inoculation had been intra-ocular, they were also found in great numbers in the cornea; in the vitreous they showed two places of choice, namely, at the orbiculus ciliaris and in the neighbourhood of the lens. The lens was always free from spirochaetes except when the capsule was wounded by the inoculation; it seems that the relative invulnerability of the lens by the spirochaetes depends more on the integrity of the capsule than on a specific condition of the lens fibres. This confirms the fact that Uhlenhuth and Fromme could infect other animals with human aqueous and vitreous, but not with lens of infected animals.

Hertel points out the practical consequence of his experiments,

that the secretions of the conjunctivitis set up by icterus febrilis contain spirochaetes, and, therefore, may cause a new infection.

J. VAN DER HOEVE.

(2) **van Schevensteen (Belgian Army).—A case of retino-choroiditis in the course of an attack of ictero-haemorrhagic spirochaetosis. (Un cas de complications rétino-choroidiennes à l'occasion d'une atteinte de spiro-chétose ictéro-haemorragique.)** *Ann. d'Ocul.*, December, 1917.

(2) **van Schevensteen** reports a case of retino-choroiditis observed during convalescence in a soldier affected with ictero-haemorrhagic spirochaetosis. The man developed the disease on November 17, 1916, the symptoms being of a moderate description. About a month later the eyes were examined and the vision was found to be 1·0. As regards the left eye there was retinal anaemia. The urine contained traces of blood and albumin, some white globules, many renal cells, red corpuscles; spirochaetes were found on a second examination. 4 c.cm. of venous blood were injected into the peritoneum of a guinea-pig, and was followed by jaundice. A small number of spirochaetes were discovered in the animal's liver and supra-renal capsules, but none in the kidneys. The patient was sent to his dépôt on January 10, 1917, and sixteen days later, when he complained of his left eye, albumin was found in the urine. On March 10, 1917, R.V.=1·1. Fundus normal. L.V.=0·8. Floating bodies in vitreous. Although the urine contained albumin, it was free from spirochaetes. On March 23 the vision of each eye was 1·1. The right eye was free from changes, but the left showed vitreous opacities (filamentous). On April 5 the patient complained of some slight disturbance of the sight of his right eye, and on examination the vitreous was found to be cloudy. V.=1·0. L.V.=1·0. Condition of vitreous as reported. On May 23 a patch of recent choroido-retinitis was found in the periphery of the right fundus, and seven days later a similar discovery was made in the left fundus. On June 25, R.V.=0·8; a few small haemorrhages were observed about the diseased area in the fundus. L.V.=1·1. The area of choroido-retinitis was unaltered. The vitreous opacities had disappeared. On July 15, 1917, when the man was discharged, the urine contained no albumin. R.V.=1·1. L.V.=1·1. The choroido-retinitis was in process of resolution. There were no vitreous opacities.

Incidentally, van Schevensteen mentions three other cases of spirochaetosis. In one there were a couple of crises of intense neuralgia, lasting for two or three days, affecting the supra- and the infra-orbital nerves on the left side, and accompanied by photophobia and moderate lacrymation. No ophthalmoscopic changes; urine normal. In a second patient (who was convalescent) violent

pain around and in the eyes was complained of, and signs of a past iritis were found in one eye. No albumin in urine. S. S.

(3) **Moret (Bourbourg). — Ocular disturbances in ictero-haemorrhagic spirochaetosis.** (**Troubles oculaires dans la spirochétose ictéro-hémorragique.**) *Arch. Méd. belges*, December, 1917.

(3) **Moret** had had an opportunity of studying from an ocular point of view seventy-two cases of ictero-haemorrhagic spirochaetosis (Weil's disease) brought from the Belgian front. He divides the course of the malady into two periods: (1) the acute or congestive, and (2) the period of decline or anaemia, and points out that different ocular disturbances are found in the two periods.

The acute stage of grave or moderate types of the disease is characterized by asthenia and a sudden departure from health, accompanied by a temperature of 39° C. or 40° C. There is headache. From the first or second day there is intense jaundice and albuminuria, epistaxis, petechiae, and redness of the conjunctiva. The temperature falls from the seventh to the thirteenth day. In about one-half of the cases after several days without fever the temperature again rises, but not to so great a height as in the first instance. From the outset the spirochaete may be found in the blood and the cerebro-spinal fluid, and it makes its appearance in the urine from the twelfth to the sixteenth day of the disease, and this elimination by the urine may continue for two or three months.

The anaemic period which follows grave or marked cases of the disease, may last longer than two months. It begins on an average towards the end of the second week of the malady, is sometimes of a very pronounced nature, since the red blood cells and the haemoglobin may fall to fifty per cent of the normal.

There are slight or abortive forms where the diagnosis can be made only by finding the spirochaetes in the blood and urine. In such cases the author has observed no ocular complications.

1. During the acute phase of the more severe cases the eye symptoms include:

Conjunctiva.—Redness of the conjunctiva is present in most cases (25 in 30 cases). It affects the ocular conjunctiva, and lasts on an average for eight to ten days. The association of a congested conjunctiva with a jaundiced sclera gives a characteristic appearance to the eye, which may lead to an early diagnosis of the disease. The intensity of the redness bears a relationship to the severity of the underlying disease, and has, then, some prognostic value. The congestion is not attended by the usual accompaniments of inflammation of the conjunctiva, such as discharge, watering of the eye, or agglutination of the eyelids. On

close examination, the main conjunctival vessels show varicose dilatations. The vessels start from the culs-de-sac and are directed towards the cornea, and in severe cases anastomose with the pericorneal vessels, which are also engorged. In such cases adrenalin dropped into the eye has little or a very transient effect upon the vessels. *Episclera.*—If pronounced, redness should lead one to suspect the existence of disturbance of the uveal tract. *Internal membranes.*—In cases accompanied by marked congestion of the conjunctiva the uveal tract appears to be often involved. Under these circumstances the pupil may be somewhat contracted; an attentive examination reveals turgescence of the iris; while no dilatation of the pupil follows the application of cocain (4 per cent.) or of adrenalin (1/1,000), although atropin or homatropin produces its usual effect. In two of the author's cases both eyes developed definite iritis. In several patients with conjunctival congestion a corresponding hyperaemia of the optic disc was noted by Moret. Retinal haemorrhages were not observed.

The author explains the congestion of the conjunctiva and other parts by assuming a marked inadequacy of the angio-tonic functions of the supra-renal bodies.

2. During the period of anaemia, patients often complain of the eyes readily tiring when reading, of *mouches volantes*, and of asthenopia. The redness of the external membranes observed earlier in the disease is replaced by blanching of the parts, so that the ocular conjunctiva has a porcellaneous appearance. In several cases a neuro-retinitis seemed to be present, although the functional symptoms were not in agreement with the ophthalmoscopic appearances. It may be said that a similar ophthalmoscopic picture has been found in chlorosis, leucaemia, and other forms of symptomatic anaemia. During this stage Moret has come across retinal anaemia more than once.

The following conclusions are reached:

1. Serious cases of ictero-haemorrhagic spirochaetosis are accompanied by various disturbances of the visual apparatus.

2. From this point of view the affection may be divided into two periods:

(*a*). The acute or congestive period.

(*b*). The period of decline or of anaemia.

Different disturbances due to different causes correspond to each of these two periods.

3. During the period of congestion we meet with:

(*a*). Vaso-motor disturbances of the external and sometimes of the internal membranes of the eye.

Conjunctival congestion is an earlier symptom of the affection, and is sometimes accompanied by a corresponding congestion of the uveal tract and by hyperaemia of the deep membranes.

This vaso-dilatation is not of inflammatory origin, but appears to be due to a pronounced disturbance of the angio-tonic function of the supra-renal bodies.

(*b*). Superficial and sometimes deep haemorrhages of the eye.

(*c*). The ictero-haemorrhagic spirochaete is capable of localizing itself in the iris and of producing iritis.

4. During the period of anaemia the subjective symptoms observed in profound anaemia are met with: asthenopia and *mouches volantes*.

Ophthalmoscopic examination often reveals a certain degree of retinal anaemia.

In several patients with an ophthalmoscopic appearance recalling that of neuro-retinitis, little in accord with the functional disturbances, has been met with. A similar observation has been already made in other forms of anaemia, essential or symptomatic.

S. S.

IV.—PERIMETERS AND PERIMETRY

(1) **Rönne, Henning (Copenhagen).—Some cases of hysterical defect of the field of vision. (Einige Fälle von hysterischem Gesichtsfelddefekt.)** *Klin. Monatsbl. f. Augenheilk.*, March-April, 1914.

(1) **Rönne** reports several cases which illustrate the great variety of symptoms in hysterical cases. One was a case of multiple sclerosis following trauma. The discs showed atrophic pallor, but central vision was 6/6, and the peculiar feature of the case was that a much larger field was obtained on the Bjerrum screen with a 20/2000 object, than on the perimeter with a 10/300 object. After the field had been measured on the perimeter, Rönne remarked to a colleague that he would now take the field with a much larger object, and proceeded to the Bjerrum test. The striking result is explained as due to suggestion.

In another case, in which there had been a contusio bulbi eight and a half years earlier, there was a normal field for white, a contracted field for red, and a nasal hemianopsia for blue. The boundary of the hemiopic field was vertical, but when the head was placed with an inclination of 30 degrees to the vertical the boundary of the field was still vertical, illustrating the subjective character of the defect.

The author points out how, in such cases, the result of the investigation of the fields depends on the expectation of the observer, and on suggestions due to his methods. The results should be carefully checked and controlled, and he refers to the

value of repeating the perimetric investigation on the Bjerrum screen with objects of the same angular dimensions.

A. J. BALLANTYNE.

(2) **Peter, Luther C. (Philadelphia).—A new hand campimeter.** *Ophthal. Record*, July, 1915.

(2) **Peter** has devised a hand tangent perimeter, consisting of a light blackboard fourteen inches square, to the bottom of which is attached a metal quadrant with a radius of six and a half inches, its other end being shaped to the lower eyelid and cheek, and is directly opposite the central point of fixation on the board. The instrument is kept in position by the patient holding a handle which is attached to the lower part of the quadrant. Ten degree circles are lightly traced on the board which gives readings up to 45°. The blind spot is also mapped out on the board. The chart is an exact reduction of the board.

J. JAMESON EVANS.

(3) **Zade (Heidelberg).—Peripheral ring scotoma. (Periphere Ringscotome.)** *Arch. f. Ophthal.*, November, 1915.

(3) **Zade** was led to examine the fields of vision of a number of men of all ranks in connexion with the German Flying Corps, from his observations on a soldier who complained of headache, dread of light, and an irritability of the eyes, which was attributed to prolonged exposure to bright light while on duty in a balloon. Zade found conjunctival thickening and injection, and a peripheral ring scotoma in each eye. While it was the custom for the pilot to wear protective goggles made of uncoloured glass, the observers and machine-gun men seem, in 1915 at any rate, not to have been compelled to use any protection for the eyes at all. Zade's studies proved that a series of officers and men were affected with peripheral ring scotoma, and led to the adoption of chlorophyll tinted protective goggles by the men of the flying corps.

The ring scotoma was a scotoma for white found at from 35° to 50° from the fixation point; this ring was not always complete, but generally only a small sector was wanting. The breadth the scotoma corresponded in most instances to a breadth of 1°. Only in the middle of the ring was it absolute; this absolute scotoma being bounded on each side by a minute breadth of relative scotoma.

Since in the field lazarette perimeters were not available, Zade adopted the tangential method of perimetry, using a 4 mm. square of white paper, carried on the end of a black handle, as his test object. The field was tested in 16 meridians, and the results were reduced to charts for preservation with the aid of a protractor. Some of the author's cases appear undoubtedly to have been of an

hysterical nature, but in other cases Zade concludes that the peripheral ring scotoma is due to dazzling by light.

The remainder of the paper is given over to a summary of Birch-Hirschfeld's views on ring scotomata. An illustration of the tangential method of perimetry and some representative charts are appended.

R. R. JAMES.

(4) **van der Hoeve, J.** (**Groningen**).—**Defects of the visual fields in connection with the choice of an operation in glaucoma.** (**Gezichtsveld defecten in verband met de keuze van operatiemethode bij glaucoom.**) *Nederlandsch Tijdschrift voor Geneeskunde*, 1916, Part i, p. 967.

(4) **van der Hoeve** thinks that Elliot's trephining of the sclera may be safely performed in those cases of glaucoma where the restriction of the field nearly involves the fixation spot, in which cases iridectomy, as generally admitted, is very dangerous to the central vision. The best way of treatment of these cases is pilocarpin under careful observation of the central parts of the field and, if the slightest shrinking towards the centre of the field is noted, trephining is indicated. van der Hoeve gives the history of a number of these cases in which the central vision was preserved after the operation.

The examination of the central part of the field in these cases should be done after the Bjerrum method. It often occurs that if only the periphery of the field is tested, the patient seems to do well, whereas in reality there is an important Bjerrum scotoma near the centre that brings central vision into great danger.

The writer relates a convenient method of recording the results of the Bjerrum examination. A positive lens forms an image of the block screen with the scotoma marked on it with chalk, on a glass plate. A paper scheme of the field is laid on this transparent glass plate and the contours of the scotomata are traced over.

G. F. ROCHAT.

(5) **Walker, Clifford B. and Cushing, Harvey** (**Boston**).—**Studies of optic nerve atrophy in association with chiasmal lesions.** From the Surgical Clinic, The Peter Bent Brigham Hospital, Boston. *Arch. of Ophthal.*, Vol. LXV, No. 5, September, 1916.

(5) The present communication by **Walker** and **Cushing** is a continuation of their previous work on the subject. It runs to thirty pages, and is illustrated by forty-seven cuts in the text and by twelve very beautiful plates. It does not lend itself to abstracting except by a reproduction of their conclusions which are as follows:

1. Despite the so-called atrophic pallor of the disc in patients having visual-field defects resulting from lesions in the chiasmal

regions, the histological examination of the nerves fails to show the expected degree of fibre degeneration unless the process has been of long duration.

2. The atrophy in the tracts considerably antedates that in the nerves, where the fibres may be preserved by their retinal ganglion cells for several years after complete functional blindness has occurred.

3. Our cases serve to illustrate the facts that in the presence of chiasmal pressure of known long duration associated with sharply cut hemianopsias, even when to the ophthalmoscope the nerve shows the pallor of presumed atrophy, there may be no corresponding sharp delimitation of the areas of atrophy in the cross sections of the nerve.

4. This at first sight would appear to be an inconsistency, but our more accurate perimetric findings with graded discs show that the boundaries of the seeing areas are less sharply cut than we had previously supposed, and, perhaps, correspond after all with the diffuse picture in the nerve.

R. H. ELLIOT.

(6) **Morax, V. (Paris).—Hemianopsia from contusion of the skull. (L'hémianopsie par contusion du crâne.)** *Ann. d'Ocul.*, March, 1916.

(6) **Morax** records the following two cases: 1. Soldier, aged 26, December 24, 1914. Gunshot wound striking the right occipital region tangentially, causing an insignificant skin wound. X-Rays showed a slight depression of the bone without fracture, splinters or intracranial projectile. No loss of consciousness but immediate ill-defined disturbance of vision. January 3, 1915.—Eyes objectively normal, V.R. 5/7·5, L. 5/10. Typical left hemianopsia. Difficulty in reading. Field for hand movements normal, colours not recognized in left half of visual fields. January 18.—Limited hemianopic scotomata occupying small areas in left inferior quadrants 5° to 10° from fixation point. Colour vision good except in scotomata. October 28.—Sudden loss of consciousness of very short duration followed by no change in ocular condition. January 28, 1916, 10.30 a.m.—Attack of cloudy vision and confusion of ideas without loss of consciousness or motor symptoms. Same afternoon, V.R. 5/7, L. 5/12, total left hemianopsia with peripheral contraction right sides of fields. Same evening patient noticed fields improving. February 1.—V.R. 5/7, L. 5/8. Fields as before attack of January 25, except scotomata a little larger. Since that date three attacks of dull vision with temporary increase in size of scotomata and reduction of vision in left eye resembling ophthalmic migraine but without headache and followed by more prolonged visual disturbance. 2. Soldier, aged 28, September 2,

1915. Struck on the head while wearing his casque. September 29.—Slight excoriation in right occipital region, no penetrating wound or manifest cranial depression, patient almost blind, but seemed to have some perception of light in his right field. Objective: slight papilloedema, but otherwise normal. General condition: headache, dulness, otherwise normal. X-rays negative. No change for 10 days, then 15 cc. of blood-stained fluid removed by lumbar puncture. This was sterile and contained a few deformed erythrocytes, but no leucocytes. October 12.—Less dull, said he saw everything white. October 22.—Vision commenced to improve. October 23.—V.R. and L. less than 1/10. Field for hand movements, left hemianopsia. November 6.—Left inferior quadrantal hemianopsia. Since then fields unaltered, V. has improved to about 1/3 in each eye but is difficult to test as the patient is illiterate.

In the absence of anatomical evidence as to the lesions in such cases as the ones under consideration, the author suggests that they probably consist in rupture of the pia mater with haemorrhage infiltrating the cerebral cortex in the region corresponding to the situation of the injury, and are comparable to the choroidal ruptures and haemorrhages caused by concussion of the eyeball. The original visual defects would then be explained as due to infiltration of the cerebral cortex compressing its elements; the improvement in the sight would be due to slow absorption of the haemorrhage and the persistent hemianopic defect to more serious injury of the cerebral cortex. He is of opinion that trephining is contra-indicated in cases of this class, as it could have no effect on the lesions which he believes to be present, while increased pressure can be relieved by lumbar puncture, as in his second case.

R. J. COULTER.

(7) **Bissell, E. J. (Rochester, N.Y.).—The value of perimetry. A new instrument and some experiments described.** *Journ. of Ophthal., Otology and Laryngology*, August, 1916.

(7) **Bissell** begins by discussing what perimetry can do for the surgeon, and then passes on to discuss its limitations, its difficulties and its pitfalls. He considers that three instruments are essential for accurate field work, viz., a perimeter, a stereoscope with Haitz cards, and a Bjerrum screen; and he outlines what, in his opinion, should be the correct rôle of each. It is of considerable practical interest to read what he has to say on the subject of the precautions to be taken in order to make Bjerrum's valuable test-method as reliable as possible. His two-point-alignment instrument for the purpose sounds particularly attractive. Under the heading of "Methods," he has much to say, but it is already so condensed that it will not bear further cutting down. The criticism may be offered that many of his points are matters

of common knowledge; but since they are certainly not matters of *common practice*, their reiteration is both necessary and valuable. In speaking of normal fields, he says:—"The macula, in complete dark adaptation may present an absolute and positive scotoma, which becomes relative as illumination is increased and then quickly disappears. The macula is not therefore so well equipped for seeing in the dark as the eccentric parts of the retina." Under "Abnormal Fields," he writes:—"Diseases of the retina and optic nerve are apt to most affect the red and green fields, and the choroid to influence the blue." Some of the statements made seem a little too absolute to be quite correct; but the paper is far too interesting and thoughtful to permit of invidious criticism on points of detail.

R. H. ELLIOT.

(8) **Calhoun, F. Phinisy (Atalanta, Ga.).—Visual fields in pellagra.** *Ophthal. Record*, February, 1917.

(8) **Calhoun** finds that in most cases of pellagra there is a contraction of the field of vision for form and colour, with frequently interlacing or misplacement of colours, especially green and red. In a relatively large proportion of the cases there is a scotoma for red and green, and occasionally for all colours. These scotomatous areas are not necessarily confined to typical or acute cases, as they were observed in two patients before a diagnosis of pellagra had been made.

J. JAMESON EVANS.

(9) **Hurst, Arthur F. (Netley).—Spiral fields of vision in hysteria, malingering and neurasthenia.** *Lancet*, November 17, 1916.

(9) **Hurst** writes to the Editor of the *Lancet* relative to this subject which had been mentioned in a review of Jones and Llewellyn's book, "Malingering, or the Simulation of Disease." Hurst holds that hysteria and malingering both yield spiral fields, because in each case the spiral fields are the result of suggestion. In the case of hysteria the symptoms are produced subconsciously either by auto-suggestion or by unconscious suggestion on the part of the observer. In malingering some symptoms are produced voluntarily by the individual on his own initiative, and others are produced voluntarily after being promoted by suggestions made unconsciously by the observer. "It is thus quite impossible to diagnose hysteria from malingering by the study of the symptoms alone."

ERNEST THOMSON.

(10) **Walker, Clifford B. (Boston).—Quantitative perimetry; practical devices and errors.** *Trans. Amer. Ophthal. Soc.*, Vol. XV (1917), p. 166.

(10) **Walker**, who is specially interested in neurological work, studies methods whereby quantitative perimetry may be rendered at once more accurate and less cumbersome. In neurological patients, whose physical condition is often bad, fixation and attention must be conserved during perimetry. From this point of view it is of importance for the examiner to be able to memorize perimetric readings, and this may be the more readily done if distractions to memory are reduced to a minimum. These distractions are grouped by Walker as: 1. mechanical; 2. regional disorientation; 3. uncertainty as to accuracy; and 4. difficulty in reading and recording. The author discusses each possible distraction. 1. *Mechanical.*—Manipulation must become an almost reflex act, requiring practically no thought. It should not be necessary, for example, to consult the chart or scale to determine the exact position of the test object. The perimeter should be fitted with a rachet automatically to fix its position at the various 30° intervals. It is important that the patient be made comfortable and that the room be kept quiet. Walker finds a wheeled table on three inch castors, fitted with compartments in the top for discs and charts, saves excursions about the room, especially in screen and umbrella work. 2. *Regional disorientation or lack of visualization.*—A routine procedure greatly aids orientation. The author always begins with the right eye, and first examines from periphery along the right horizontal axis, at the same time mapping out the blind spot as an index of the patient's powers of observation and possibly detecting an enlargement or a paracentral scotoma. From this, examination proceeds in clockwise direction about the field. Throughout the examination it is important to stand on the same side of the patient—on the left side while using the the perimeter, and on either side while using the screen or umbrella. 3. *Uncertainty as to accuracy of a reading.*—Experience alone leads to accuracy of observation. It is advisable to bear in mind the normal reading in all parts of the field of either eye for all the commonly used discs and distances. Tables are given to facilitate this process. 4. *Difficulties in reading and recording measurements.*—These difficulties are readily overcome by rendering the instruments and charts easily readable, thereby allowing greater concentration to be focussed upon the processes of memory and visualization. The author sketches some of the main features of the perimeter he has previously described (*Arch. of Ophthal.*, Vol. XLIV, p. 4, 1915). Briefly, the instrument is provided with a very large face, representing from 35 degrees to 90 degrees of field extent. Lines representing the field and single numerals representing the degrees at every intersection are stamped in the metal front and back. These stampings are so deep that they are still readily visible from any direction when painted over with a dead

black finish. Mechanical perimeters tend to inhibit the practice of visualization, and do not answer the requirements of flexibility and rapidity. The author has devoted great attention to the visual angle of each disc in his series of test objects. He describes the umbrella test employed by him. He uses the common stock canopy umbrella, the radius of which is 1,000 mm. For purposes of perimetry such an umbrella must be supported from the convex side by means of a spoked frame, and lined on the other side with black material to conceal the ribs. The support is provided with foot pieces on three-inch castors. The inner surface of the appliance is marked off about the centre with circles at 10 degrees and radii at intervals of 30 degrees, thus representing an actual field chart. By this arrangement 45 degrees are available in all directions from the centre, and fifty degrees at the rib-tips. Since there is no correction at the various 10 degree intervals, moreover, eccentric fixation can be used, making a maximum of 80 to 90 degrees available. The same circles which are accurate at 1,000 mm. on the umbrella may also be used at 2,000 mm. if numbered differently; that is to say, 20 degrees becomes 10 degrees, and 40 degrees becomes 20 degrees because the distance has been doubled. Having accumulated data of considerable accuracy regarding the field extent necessary for a screen at 1,500 mm. and at 2,000 mm., it became possible to calculate the field measurements for a new combination screen. A photograph is given of this combined screen and umbrella. The screen has a width of 100 inches and a height of 80 inches, so that from a standing position all parts can be reached without difficulty. Two screens of the size mentioned were sewed together along the horizontal meridian through the fixation point. Two leaves were thus provided, either one or both of which could be held up vertically by laying the horizontal rod held in the peripheral seam over the top support of the two back leaves of the screen, these latter being attached directly to the supporting frame. The leaves of the screen are thus held taut by the vertical gravity pull of the rods either when they are above or below the horizontal meridian. Any one of the three surfaces available can be quickly exposed for use, and each of the surfaces is marked for a different distance. Markings were not drawn upon the screen until the curvature had been corrected by a method described by the author. The available number of degrees about the fixation point obtainable on the combination screen is as follows: at 1,000 mm. 50 degrees in the vertical meridian and 60 degrees in the horizontal; at 1,500 mm. 37 degrees vertically and 45 degrees horizontally; at 2,000 mm. 30 degrees vertically and 35 degrees horizontally; at 2,500 mm. 25 degrees vertically and 30 degrees horizontally; and at 3,000 mm. 14 degrees vertically and 23 degrees horizontally. The screen has numerous advantages. It

is a very comfortable curvature to work on as compared with that of the umbrella, and as all portions are readily reached from a standing position readings are instantly made without the use of accessory devices. Further, it is easily moved to different distances and changed to the corresponding scale. Lastly, it will take the entire normal field for a disc about 1 mm. in size, and it is accurate to a high degree.

Much of the rest of Walker's exhaustive communication is devoted to a consideration of the errors or variations in reading that may arise apart from those due to screen, disc, or distance. The most important of these is probably due to illumination. These are probably greater in screen than in perimeter work, because test objects of small visual angles are considerably more sensitive to variations in illumination than the larger sizes, as the author has shown elsewhere (*Trans. Section on Ophthal. Amer. Med. Association*, 1917). The material of which the screen is made influences the readings considerably; although black velvet forms the best surface, yet black felt or broadcloth is a very good substitute. The wearing by the examiner of a black gown and gloves is advised. The condition of the discs as to fading or soiling must be watched. The patient should be allowed to wear his glasses during the examination, and it has been found possible simply to hang the proper trial-case glass from the eyebrow by the use of a piece of adhesive strapping. The author takes up the particular errors liable to be met with in the course of examination by (*a*) the plane or tangent screen; (*b*) the umbrella; and (*c*) the combination screen. He describes a perimetric chart which he has designed on a modified Mercator projection scheme. The true Mercator projection is not satisfactory peripherally.

In conclusion, Walker points out that the results of various observers using quantitative perimetry may fail to check by rather large margins as regards the absolute measurements, although diagnosis may not be affected thereby, inasmuch as the errors are usually constant throughout an examination. The possibility of making these errors increases as the visual angle of the test object decreases below 15 minutes. "To reduce these errors to a minimum the discs and distances must be accurate; the surfaces used should be of high-grade reflexless black material and of approximately correct curvature. The test object should be a clean, reflexless white, and practically rimless. Black gown and gloves should be worn by the examiner. Probably if these factors were controlled the results would be sufficiently uniform." Illumination difficulties would still be a potential source of variable results. The latter factor, however, can be controlled by artificial illumination at some expense. Walker is convinced that mechanical methods of making any but very ordinary records are unserviceable in modern perimetry,

and that by using proper apparatus and by cultivating the memory of readings, better records may be obtained. 'Without doubt the use of small visual angles has enlarged and will increasingly continue to enlarge the confines of our knowledge in the field of perimetry.'

S. S.

(11) **Elliot, R. H. (London). — A scotometer.** Appendix to "Glaucoma," 1918. London: H. K. Lewis, 136, Gower Street, W.C.

(11) The scotometer devised by **Elliot** (made by Weiss, of London) represents an effort to combine the advantages of Priestley Smith's scotometer with those of the Bjerrum screen. The principles involved are: (1) circular instead of radial examination of the field; (2) examination of the field at intervals of 1 degree; and (3) magnification of the chart, rendering the results at once easier to obtain and to appreciate. The scotometer consists of a circular wooden wheel, a little over a metre in diameter, covered with black velvet, and rotating on a central axis. It is mounted upon an adjustable metal stand, to the top of which is fixed a stationary perimeter pointer and a desk for carrying the sheet of paper on which the observations are recorded. In the centre of the black velvet face is a 3 mm. white ivory disc, within which is a 1 mm. black ebony disc, to which is attached a silk cord, one metre in length, bearing at its end a piece of vulcanite, shaped to fit the patient's cheek. By this arrangement the patient can be readily kept at the correct distance of one metre from the screen, although a later and better device for this purpose has been to supply a chin rest and forehead band mounted on a strong upright stand. From the centre to the periphery, along one axis, the wheel is marked out by longer and shorter stitches of black silk into 5 degrees and 1 degree spaces. The test objects are 1 mm. and 2 mm. discs of white blotting-paper, which adheres readily to the velvet surface. The record is taken from a cardboard disc fixed to the centre of the back of the scotometer, and graduated from 0 degree to 360 degrees, the figures reading clockwise. A black band on the disc denotes the line along which degrees of measurement from the centre to the circumference are marked upon the face of the velvet.

S. S.

V.—JUVENILE GLAUCOMA

Haag, Carl (Tübingen).—Juvenile glaucoma. (Das Glaukom der Jugendlichen.) *Klin. Monatsbl. f. Augenheilk.*, February-March, 1915, p. 133.

Haag's article consists of a minute statistical study of 67 cases of juvenile glaucoma, by which he means glaucoma in persons less than 35 years old, and of a comparison of his findings with those of Löhlein. A detailed analysis of the cases is given in tabular form, and special points are separately dealt with in 14 subsidiary tables. The substance of the paper may best be conveyed by a selection from the author's conclusions:

The true clinical picture of juvenile glaucoma can only be obtained from a study of a large number of cases including all varieties, and not by collecting from the literature cases which are often only published on account of their unusual nature.

The frequency of glaucoma in young persons is similar in both sexes, and increases with age. Each eye is equally liable. Other morbid conditions, especially disturbances of nutrition, are relatively common.

In the material examined, inflammatory glaucoma was twice as frequent as the simple variety.

Myopia was more commonly found than hypermetropia. Highly myopic glaucomatous eyes are more common in males than in females, and simple glaucoma is more frequently met with than inflammatory glaucoma in myopic eyes.

A deep anterior chamber is more common in simple than in inflammatory glaucoma, and the converse is true for a shallow anterior chamber. Deep anterior chambers are found almost solely in myopic eyes.

Hereditary influences are apparently no more frequent in juvenile than in adult glaucoma, though congenital anomalies are common in the former. The material investigated yielded no evidence in support of the assumption that there is any substantial difference between the glaucoma of the young and that of adults.

H. M. TRAQUAIR.

VI.—OPERATIONS

The Removal of Lamellar Cataract

Krückmann, E. (Berlin).—On a method of removal of lamellar cataract. (Ueber eine Methode zur Entfernung des Schichtstares.) *Arch. f. Ophthal.*, Vol. XC, 1915.

Krückmann had formerly removed this type of cataract at one sitting by a method employed by Sattler originally for the extraction of the clear lens of high myopia and afterwards extended to lamellar cataract, and had obtained excellent results in the case of small cataracts. With larger cataracts, however, he had sometimes found difficulty in coaxing out the lens mass, especially when the central part of it was compact, and it was not always possible to break it up satisfactorily within the capsule. This led him to devise another method, which is recommended specially for such cases, and is as follows:

He passes a slightly curved knife-needle under the conjunctiva at a point in the line of the transverse diameter of the cornea 3 mm. to the outer side of the limbus, and carries it horizontally to the corneal margin and into the anterior chamber as far as the centre of the widely dilated pupil. The point of the instrument being then raised to the upper edge of the pupil he lacerates the anterior capsule of the lens along its vertical diameter. This incision he makes very lightly, his object being merely to obtain as free an opening as possible in the capsule. Then carrying the point of the knife along the horizontal diameter of the lens to the nasal margin of the iris, sometimes even for a little distance behind it, he now turns the knife vertically and cuts right into the lens so as to divide the lens substance itself. (In this way a large crucial incision is made in the capsule and the anterior cortex is at the same time split horizontally. If the lens matter were divided in making the first vertical incision it would be impossible to obtain a sufficiently free opening of the capsule horizontally.) From the temporal end of this incision he now passed the knife behind the cataract and levers it into the anterior chamber—this he regards as an important step in the *technique*. There is never any difficulty in dislocating the cataract forward in this way and when once it is in the anterior chamber it can be broken up with the knife without any risk. It is sometimes possible, by turning the edge of the instrument in the anterior chamber forwards, to cut into the cataract from behind, slight pressure being made on it against the posterior surface of the cornea so as to prevent its slipping away. At all events this manoeuvre provides a much better view in breaking up the lens mass here and a much simpler way of doing it than inside the capsule. Moreover, the swelling of the lens develops uniformly and rapidly. If after a few days the lens matter is ready for removal, he proceeds to pass a keratome under the conjunctiva from a point 3 mm. above the limbus into the anterior chamber and through the lens substance, moving the instrument gently from side to side with the object of breaking up the mass still more freely. The lens matter is then evacuated slowly and carefully, and this can be done so thoroughly that it is possible to order the necessary glasses two or three weeks afterwards.

This method has invariably yielded good results in his hands. In many cases it is sufficient to make a comparatively small incision with the keratome at the limbus. The danger of a prolapse of the iris or vitreous is almost entirely avoided. The opening of the capsule in this way renders the use of any other instrument unnecessary, while the formation of an after-cataract is quite exceptional. The real advantages of the operation, according to Krückmann, consist in the facts that it affords a safe method of breaking up the central portion of the lens at two sittings under direct observation; a small keratome incision is therefore possible, and the period of after-treatment is comparatively short.

THOMAS SNOWBALL.

Sellar Decompression

Parker, Walter, R. (Detroit).—Report of a case of total loss of vision in one eye and partial loss in the other completely relieved by a sellar decompression operation. *Trans. Amer. Ophthal. Soc.*, Vol. XV (1917), p. 91, and *Arch. of Ophthal.*, November, 1917.

Parker's patient, aged 33 years, had poor sight (R.V. 1/200; L.V. 6/7·5), pallor of the lower and outer quadrant of the right optic disc, and possibly slight, localized oedema of the left optic disc. The visual field of the right eye was absent except above, where it was contracted to 55° out, 45° up, and 50° in. No colour perception. The visual field of the left eye showed a temporal hemianopsia for green, but was otherwise normal. Six days later the right field was entirely lost. The left field showed quadrantal defects for green, red, and blue, which varied in extent directly according to the size of the test-object. X-ray examination suggested as the cause of these symptoms a new growth, involving the soft tissues occupying the sella. The von Pirquet reaction was strongly positive, but the Wassermann reaction (blood and spinal fluid) was negative. Furthermore, even after a provocative injection of neosalvarsan, the Wassermann reaction was negative. Sellar decompression by Harvey Cushing on November 4, 1915, with removal of a portion of the pituitary "struma." On the eleventh day after operation the central vision of the right eye was normal, and the field showed only an inferior nasal quadrantal defect, while on November 11, 1915, the vision of the left eye was 20/15, with only slight defect on the green screen. General health remained good. The case was apparently one of cyst of the pituitary gland with pressure on the chiasm leading to physiological block, which was relieved by sellar decompresion.

S. S.

Elliot's Operation

Lundsgaard (Copenhagen).—Experiments with Elliot's operation in glaucoma. (Erfahrungen ueber Elliot's Operation bei Glaukom.) *Klin. Monatsbl. f. Augenheilk.*, February-March, 1915, p. 209

Lundsgaard prefaces the statement of his results by some remarks on the diagnosis of glaucoma and the indications for operation. He attributes more importance to the indications obtained by Schiötz's tonometer than to those obtained by earlier methods, including Bjerrum's examination of the visual fields. At the same time he has observed cases in which a tension of 30 to 35 Schiötz, or even more, which had lasted some time, disappeared either spontaneously or after the use of miotics. In regard to *technique*, he advises that the trephine should be sharp, and should be examined before use with a lens. "Dry sterilisation" is to be recommended. He does not practise "splitting the cornea," as he finds it unnecessary. The conjunctival flap should be thick, and the sclera should be thoroughly cleaned at the point where the trephine is to be applied. The trephine should have an inner moveable tube arranged so as to act as a stop, its end coming to about 1 mm. within the cutting edge. It is best to cut the corneal side of the disc more deeply. Lundsgaard usually makes a peripheral iridectomy, and sutures the flap. Atropin is used on the third day.

The results of operation in 40 eyes are given in a table. In 32 the tension was reduced, and in 29 of these the result was completely satisfactory. Since operation, seven of the cases have been observed for over two years, and only five for less than six months. In six of the remaining eight cases the tension was unaltered, in the two others retinal detachment with atrophy of the globe ensued. Both of these eyes had attacks of cyclitis. Filtration oedema in the conjunctiva was present in all the cases except one, and in this case the tension was lowered. On the whole, better results were obtained by the 2 mm. than by the 1·5 mm. trephine. The author seems to favour iridectomy, though he considers the evidence provided by his cases to be inconclusive. The results as to vision and fields of vision were eminently satisfactory.

The greatest risk is late infection owing to the weak protection afforded by the conjunctival flap. In two of the cases the conjunctival covering gave way, and a degree of infection, fortunately short of panophthalmitis, occurred.

Lundsgaard concludes strongly in favour of Elliot's operation, with the reservation that it is not to be undertaken as a routine measure in every case of increased tension. Where the tension is

not above 30 to 35 Schiötz, and no field of vision symptoms are present, miotics should be used for a considerable time. Trephining as a prophylactic measure should not be undertaken. Where the tension is higher than 30 to 35, and not affected by miotics, the operation should be done even when the field of vision is much contracted. In secondary glaucoma, sclerectomy should only be undertaken after grave consideration. The best means to avoid late infection are a thick conjunctival flap and iridectomy.

H. M. TRAQUAIR.

Modern Tear Sac Operations

Frieberg, T. (Stockholm). — Upon the mechanism of the drainage of tears with especial reference to the results of modern tear sac operations. (Ueber die Mechanik der Tränenableitung mit besonderer Hinsicht auf die Ergebnisse der neueren Tränensacoperationen.) *Zeitschr. f. Augenheilk.*, March 1917.

Frieberg contributes a very long paper upon this subject, which runs through three numbers of the *Zeitschrift*.

The minute anatomy of the lacrymal apparatus and of the orbicularis muscle is detailed with copious references to authority. The question whether there are valves in the mucous membrane of the canaliculi and at the opening of these canals into the sac is discussed, and the opinion is given that there is some hindrance to the regurgitation of tears, especially at the sac end of the canaliculi. There seems to be no absolute evidence that there is any sphincter action around the puncta. The theories which explain the exit of the tears can be divided into two groups: The flow is dependent upon the movement of the lids, or it is not. In the latter group we find three theories. Tears flow into the nose by syphon action, by capillarity, or by aspiration from the nose. The author shows that none of these mechanisms can account for the known facts of the case. The movements of the lids can act by compressing or dilating the sac or by squeezing the canaliculi. After West's and Toti's operations the tears pass normally into the sac, so we are bound to conclude that, even if we admit some alteration in the shape of the sac, the canaliculi alone are able to drive the tears into the nose. Frieberg quotes the divergent opinions of many authors upon the action of the orbicularis, and especially of that part of it which we call Horner's muscle, upon the sac. One group states that the sac is compressed: the other that it is dilated. Frieberg cannot convince himself that either opinion is correct. There is no proof that the sac is either dilated or compressed by blinking. He comes

to the conclusion that the driving mechanism lies in the canaliculi themselves. Normally they are held open by the elastic fibres which surround them, and by the tonus of the surrounding muscular fibres. During lid closure they are compressed against the caruncle, and the fluid they contain is forced into the nose. It passes into the nose because this is the easiest path, and because there is in many cases a rudimentary valve at the sac entrance of each canaliculus.

The author gives the most minute account of the movements of the canaliculi during lid closure; it is such as to press them against the caruncle. He has, after a West operation, succeeded in proving that fluid is expressed during each lid closure. He made a funnel of rubber which he attached to a tube which was again connected to a U-tube. The funnel was pressed against the nasal opening made in the West operation and then each time the lid closed the fluid rose in the U-tube till it stood several millimetres above the level of the eye.

It seems reasonable to conclude that there is some driving mechanism in the canaliculi such as the author has described. It is, however, equally probable that the movements of the muscles in proximity to the sac do actually alter its shape and help to force the tears into the nose.

Frieberg points out that the passage of probes must have a detrimental action upon the valvular nature of the mucous membrane lining the canalculi.

T. HARRISON BUTLER.

Ligature of the Superior Ophthalmic Vein for Pulsating Exophthalmos

Golovine, S. S. (Moscow).—Ligature of the superior ophthalmic vein for pulsating exophthalmos. *Vestnik Ophtalmologii*, Nos. 2, 3, 4, and 5, 1917.

The author of the special operative treatment indicated by the title of his paper discusses in it first the history of the treatment which he advocates, and follows this up with a fairly exhaustive reference to his own cases, and observations from which he deduces the indications for that treatment.

After referring to statistics on the effect of ligature of the common carotid on the exophthalmos, as well as on the risk to life, in which there is nothing which is not pretty generally known, he describes very fully the method of treatment which he first advocated twenty years ago and has since practised whenever occasion offered.

Early in the year 1897 the author and Shimonovski recommended,

quite independently of each other, ligature of the superior ophthalmic vein owing to the not completely satisfactory result that had followed ligature of both common carotids for aneurism of the orbit.

The actual operation was first performed in 1898 by Lazaroff, on the advice of Shimonovski, and proved in his case successful.

In 1899, the author reported on two cases on which he had operated, in one of which he first resected the outer wall of the orbit to enable him to get at the deeper portion of the vein.

The same idea gradually spread beyond Russia. In 1905, Sattler published *(Klin. Monatsbl. f. Augenheilk.)* a successful case of ligature of the vein for pulsating exophthalmos, describing it as a new method of treatment. That operation was performed on one of his cases by Prof. Perthes. Sattler only very cursorily refers to Shimonovski and Lazaroff, and also to one only of the cases published by Golovine, having evidently depended solely upon abstracts made in German journals.

All that Sattler represents as new, Golovine claims was already fully described by himself five years earlier. The operation has consequently been designated Sattler's operation, not only in German, but in other foreign literature (*e.g.*, Jack and Verhoeff, *Ophthal. Record, 1907, No. 7*).

The author has had seven cases altogether. His first two cases have already been published in *Chirurgia, 1899*. As regards one of these, he had the opportunity of examining the case fifteen years after operation, and found that there had been no return of either the exophthalmos or the pulsation. The hitherto unrecorded cases are as follows:

CASE 1.—Girl of 16. Diagnosis: R.E.—Exophthalmos pulsans e aneurysmate carotidis internae. As regards its origin, the information to be got from the patient herself and her parents was scanty. No trauma was admitted, but the condition appeared to have arisen fully two years earlier. The operation which was done consisted in making a large opening into the orbit, and ligaturing the common carotid at the same time. Golovine began by making an incision at the outer margin of the orbit, in the way elsewhere described by him as Orbitomia simplex. In order then to get a free passage for the finger into the orbit, its bony wall at the outer upper and partly also the inner edges was got out of the way. There was thus made an opening which was of sufficiently uniform size in all directions, its diameter being described as equal to that of a five copeck piece. Into this opening there was found to project a hemispherical, tense, smooth, and evidently thin-walled swelling. The swelling was markedly pulsating, and during the patient's efforts at vomiting it became distended and enlarged, attaining nearly to the size of a hen's egg. As the possibility of this bursting entailed the risk of fatal haemorrhage, ligature of the common carotid was at once

proceeded with. The effect of this was immediately apparent to the finger held in the orbit. The swelling began rapidly to diminish, like an india rubber ball from which the air has escaped, and ceased completely to pulsate. For greater safety, and at the same time in order to promote thrombosis, a large tampon was introduced over which firm pressure was made with a bandage. The result when last seen, only a month after the operation, was evidently not a complete cure. The exophthalmos had greatly disappeared, but there was not a complete cessation of the pulsation.

CASE 2.—Woman, aged 26. *Diagnosis: Exophthalmos pulsans spontaneus.* Ligature at the same time of the common carotid and superior ophthalmic vein. Of this case photographs, before and after operation, were taken and appear in the paper. The author gives a very full description of the patient's condition before operation, which, however, does not contain anything of special importance except that immediately before the aneurysm made its appearance, there was noted albuminuria of pregnancy and the acuteness of vision was only 0·2. The operative treatment was begun this time with the ligature of the common carotid. As the immediate effect of this, though quite marked, did not seem to give the prospect of a thorough cure, ligature of the ophthalmic vein was proceeded with, on the assumption that it would have a greater effect in causing thrombosis in the arterio-venous aneurysmal sac.

From a longitudinal incision under the eyebrow, the tissues were dissected back, and an enlarged vessel, whose thin walls and colour left no doubt of its being a vein, was laid bare in the outer half of the upper lid. Proceeding with the dissection, this vessel was found to be continuous with the superior ophthalmic vein, which was enlarged to the size of the little finger, and which pulsated and had an appearance in every way resembling a drawing made by Nélaton post-mortem, which is reproduced in the paper. Having doubly ligatured the distended vein in the lid, the intervening portion was excised. Then the orbital portion of the vein was seized and drawn forward with forceps and ligatured in a number of places. Golovine hoped in this way to get destruction of the vein to close up to the apex of the orbit. The effect was complete disappearance of both exophthalmos and pulsation. The cure was complete, as shown by a comparison of the photograph taken before operation with that taken fifteen years later.

CASE 3.—*Male, aged 18. Diagnosis:* L.E.—Exophthalmos pulsans traumaticus. This case was treated by Strachoff. An attempt was made after a Krönlein operation to ligature the vein very far back. The result, though satisfactory so far as the exophthalmos and pulsation were concerned, caused loss of vision with the ophthalmoscopic signs of optic atrophy. This Strachoff ascribes to injury caused to either the nerve or artery by the forceps used to draw

the distended vein forward. At the time of the operation, very severe haemorrhage followed immediately on traction made with the forceps.

CASE 4.—Peasant, aged 58. This was also one of traumatic pulsating exophthalmos. It was treated, as far as the ophthalmic vein is concerned, in much the same way as Case 2. The result seems to have been good, both as regards the exophthalmos and the pulsation.

CASE 5 was the result, as the author states, of the "traumatic epidemic" of the present time. It dates from July 29, 1916. The man was struck by a rifle bullet in the open mouth. This caused a slight wound of the lower lip, broke several of the teeth in both upper and lower jaw on the right side and fractured the right lower jaw.

The bullet lodged under the angle of the jaw and was extracted.

After about half an hour's unconsciousness, the man was conscious of a loud noise in his head and right ear. He observed immediately that the right eye was swollen and weeping; he was unable to open the lids and the eye appeared to be proptosed. He first came under the case of Golovine in December, 1916. He had no difficulty in diagnosing a pulsating exophthalmos, and offers the following explanation for its occurrence: the blow from the bullet, though spent, was sufficient to transmit a strong impulse through the soft tissues, to the column of blood in the carotid, which in turn transmitted the force to the walls of the artery where it enters the cavernous sinus, leading to rupture and the development of an arterio-venous aneurysm. The double operation of ligature of the carotid and the superior ophthalmic vein was done on December 20, 1916, and the result, as shown in the accompanying photograph, was in every way satisfactory, even the vision, which before the operation was practically lost, recovered to a considerable extent.

In a final instalment of his paper which appeared in the June, July, and August number of the same journal, the author goes very fully into the special indications for the various operative procedures which are adopted in the case of orbital aneurysm. He refers in this connection to published results by other Russian, British, French, and German surgeons, which have appeared, since his introduction in 1897, of the new method of treatment, and concludes as follows:

Ligature of the superior ophthalmic vein is under all circumstances, less dangerous than ligature of the common carotid.

It is indicated particularly where the aneurysm has involved dilatation of the veins of the face.

Where the cerebral symptoms (noises in the head and paralyses), are prominent ligature of both the ophthalmic vein and the common carotid are indicated.

In all cases where, along with the symptoms of aneurysm, there may be the smallest suspicion of neoplasm of the orbit, resection of the outer wall of the orbit is called for to begin with, in order to provide free access. If there should be a tumour, its removal can then be proceeded with. If the condition turns out to be a purely vascular distention, the access is sufficiently free, even if the dilated vessels should lie to the inner side of the orbit.

In cases where the symptoms of aneurysm leave no doubt as to the diagnosis, he considers the resection of the outer wall of the orbit unnecessary, as through a moderately sized incision made below the eyebrow, sufficient access can be obtained to effect the ligature of the vein without difficulty.

In cases of recurrence after, or failure from ligature of the common carotid, ligature of the vein is necessarily indicated as preferable to ligature of the carotid of the other side.

If there should be aneurysm on both sides, the indication would be ligature of both superior ophthalmic veins, not ligature of both carotids.

GEORGE A. BERRY.

VII.—THE PREVENTION OF POST-OPERATIVE INFECTIONS

(1) **Lindner, K. (Vienna).—The question of prevention of post-operative infections. (Zur Frage der Verhütung postoperativer Infektionen.)** *Arch. f. Ophthal.*, Bd. LXXXVIII, Heft iii, August, 1914.

(1) In 1911, an investigation was commenced at Fuchs's Clinic to find out whether, on the basis of the Elschnig-Ulbrich improved method of examining the conjunctival sac for streptococci,* any diminution of wound-infections after cataract-operations is to be hoped for.

At the outset, **Lindner** describes at length what has been for years the routine followed in the clinic with regard to cataract cases. Clinically clean cases are operated on the day after admission without any bacteriological examination. Clinically unclean cases are dealt with in such manner as to render them clinically clean. The so-called mere "senile catarrhs" are not looked upon as clinically unclean.

He analyzes 1,943 cases of flap-extraction done between January 1, 1907, and December 31, 1910.

He thinks even to-day that it is not possible in the instances of iritis

*The term "streptococci" is to be understood in the wider sense, when not qualified.

and irido-cyclitis to draw a sharp line between cases of bacterial post-operative inflammation and cases of inflammatory disease of the eye from some other cause, as in almost every case of this nature exact proof in favour of either the one or the other aetiology cannot be adduced and as clinically the boundary is certainly overlapping. Hence, on practical grounds, only cases of panophthalmitis, as also cases of hypopyon-iritis with exudate-formation, are included under infections in his statistics. In the table the cases are divided into those with complete iridectomy, those with peripheral iridectomy, and those without iridectomy for each of the four years. (The table gives the number and percentage of infections and losses for each group for each year. Totalling up the number of infections and the number of losses for the whole number of 1,943 cases, I arrive at the percentage figure of 3.6 for infections and 2.4 for losses. D.V.G.)

Lindner presents calculations to show that the number of losses from infection is mainly dependent on the personal factor, the skilled operator having to his credit the least number of losses. It appears that from a consideration of large numbers of operations, it is found that, for a good operator, the percentage of losses ranges between 0.3 and 0.6.

These results are to form the material for comparison with the results obtained, *caeteris paribus*, under the Elschnig-Ulbrich method.

The peculiar working of Fuchs's Clinic is used by Lindner to tackle the problem in a way somewhat different from that which had been followed by others.

In the clinically clean cases, about two to three hours before the operation, cultures (after Elschnig-Ulbrich) are taken. Thus, independently of the operation, the bacteriological finding is obtained, at the earliest, a day later, deriving in this manner a direct comparison between bacteriological finding and healing of wound.

The clinically unclean cases are treated as formerly, but with this difference, that now they are subjected to constant bacteriological control and the operation made dependent, as far as practicable, on the non-demonstrability of streptococci in the conjunctival sac. This is calculated to bring out, *caeteris paribus*, a diminution of infections, if any, as against the period in which clinical judgment prevailed.

Not long after the commencement of this régime, it became evident that in spite of the very small number of infections, the percentage of streptococci-carrying conjunctivæ were at least as large in this clinic as in others. On this account the eventual practical value for the clinic of bacteriological examination before operation diminished considerably.

Lindner employs the following *technique*:—

A few drops of horse-serum bouillon are run into the conjunctival

sac, the lower lid is moved about, so as to spread the medium, and the fluid is then sucked up and transferred to the culture tube. Only in the case of eyes full of tears was the lacrymal fluid present sucked up by itself and transferred to the culture tube.

Great care was bestowed on the preparation of the culture medium. In order to inhibit the agglutinating and growth-inhibiting action of fresh horse-serum, after distribution into stock-tubes in quantities of 20-25 c.cm., the horse-serum bouillon mixture (1 : 3) was inactivated by exposure to a temperature of 58° (I take it to be Centigrade, D. V. G.) for two hours—a measure ensuring its sterility at the same time.

Further, observing that the growth of the streptococci varied with every fresh supply of bouillon, in order to avoid the annoyance of having to standardize the medium every time, and to obtain a uniform growth, Lindner took care to prepare the culture medium in large quantities on each occasion—generally 400 c.cm. and always obtained the ingredients from the same stores. The proportion set down by Elschnig and Ulbrich (horse-serum : bouillon : : 1:3), proved to be the most suitable, as higher concentrations, such as 1:1, were found unfavourable to good growth.

The tubes to be used were filled to about 1 c.cm. After 24 hours' incubation, the tubes were examined, and put back in the incubator for a further period of 8-10 days, in which time, even without incubation, they are usually found desiccated. This was done in order to be able to examine the original tube in the event of infection occurring.

After 24 hours' incubation, there were found staphylococci in 37 per cent. of the cases, xerosis bacillus in almost every case, diplobacilli in just over 1 per cent. (12 cases), Gram-negative rods (the nature of which was not determined) in 3 cases, bacillus subtilis in 1 case, and Friedländer's bacillus in 1 case.

Owing to the unsuitability of the medium employed for their growth, their constant ineliminable presence on our body, the impracticability of avoiding contamination from canthi, lid-margins, and lashes in taking cultures from the conjunctival sac, and the extreme rarity of infection by them after cataract extraction, Lindner considers the presence of staphylococci in the cultures as of no importance. Because of its incapacity to produce intra-ocular infection and the absence of any reason to suppose that its presence in the clinically clean conjunctiva favours infection by other bacteria, the presence of diplobacilli is also considered to be of no account.

Understanding the term "streptococci" in the wider sense, all transitions from typical pneumococci, as usually found in the conjunctival sac, and the 4-8 membered chain with still an indication of the lancet-shape of pairs, to the chains which resemble morpho-

logically streptococci in the narrower sense, are found, even several types in the same tube.

He tried, like previous investigators, to differentiate the streptococci found, but achieved no practical result. Neither blood-media nor solutions of taurocholic acid helped to clear up satisfactorily whether in any given case the germs found were pneumococci or streptococci in the narrower sense; because the trend of opinion as regards differentiation at present is, that strains of non-haemolytic saprophytic streptococci may become parasitic in the body and then acquire the haemolytic property, and, vice versa, can again lose the acquired property on artificial media, thus rendering differentiation on the ground of haemolysis uncertain.

Animal inoculation was not found any more helpful in the matter. Because of the attenuation of the streptococci found, of nine young mice inoculated intra-peritoneally with 24-hour old original cultures, only 3 were positive, and of these 2 demonstrated pneumococcal septicaemia, only staphylococci being demonstrable in the blood of the third. Six mice survived.

Having regard to the rapid loss of virulence suffered by pneumococci in culture, Lindner tried 8-10 hours' old original cultures obtained from the conjunctival sacs of streptococci-carriers, but did not find them any more virulent to white mice than 24-hours' old cultures.

While thus constrained to leave the question open of differentiation as between pneumococci and streptococci in the narrower sense, Lindner inclines to Axenfeld's view, that most probably in every case of infection the pneumococci are concerned, especially in view of the fact that post-operative infection by means of streptococci occurs very seldom.

The investigation concerns only the connection between the demonstrability of streptococci and infection. Altogether about 500 cases were examined, 46 per cent. of which showed streptococci. Of these cases all but 24 were operated on, and 14 only had a complicated post-operative course. In 260 of the operated cases the pre-operative bacteriological finding was negative.

Of the 14 cases with a complicated course during wound-healing, 6 were affected with iridocyclitis, and, so far as they could be followed, had a favourable end; 3 suffered from hypopyon-iritis, loss of vision resulting in 2 of them; and 3 terminated in panophthalmitis.

Here Lindner details the clinical and bacteriological aspects of the cases of hypypyon-iritis and of panophthalmitis.

In his concluding remarks, Lindner discusses most points on the data derived from his investigation. Because of his having found in many instances negative 24-hour old culture tubes positive after longer incubation and because of pneumococcic infection

having occurred in cases with negative finding previous to the operation, he thinks that the percentage of streptococci-carriers stands higher than 58.

In two cases of hypopyon-iritis, cultures made from the contents of the anterior chamber in horse-serum bouillon, gave xerosis bacilli. As pointed out by Axenfeld, genuine xerosis infections after cataract extraction hardly ever occur, except under special conditions, such as the presence of iron in the eye. (An interesting case of massive Gram-positive rods of the diphtheria group in sections of an eye in which a piece of iron had been encapsulated at the root of the iris, and which was enucleated because of infection after cataract operation is given.) Hence, where the cultures are positive to B. xerosis, or where the finding is negative—especially in view of the fact that pneumococci in such cases very soon cease to be demonstrable and disappear altogether—he thinks it more to the point to put down the infection to pneumococci.

It appears to him that the negative result of investigation of the conjunctival sac is due to the culture-medium—horse-serum bouillon—not being sufficiently good for the germs rather than to their being present in such small numbers that not even one of them got into the fluid dropped into the sac and withdrawn. Further, where they become non-demonstrable after treatment of the conjunctiva, it is due to their diminution in numbers and attenuation, rendering them incapable of growth in the artificial medium, and not to their complete disappearance from the sac. This is not merely his experience: evidence of the kind has been adduced both by Axenfeld's school and by Elschnig's.

Investigations to find out which method of treatment was best suited to render the germs non-demonstrable in the sac proved fruitless.

Owing to the non-viability of the streptococci outside the body, it is hardly probable that infection could come from outside, especially in view of the use of shields. However, as the possibility cannot altogether be dismissed, Lindner examined all the drop-bottles of the clinic—using three drops of the bottle-contents and about 10 c.cm. of horse-serum bouillon. In no case were streptococci found.

How the infection develops in different cases is not known. What is remarkable is the occasional commencement of an acute infection in the operation-wound. Lindner surmises that in such cases the germs that get in between the lips of the wound accidentally, are brought under specially favourable growth-conditions, probably embedded in the remains of the lens or capsule, where, protected from the anti-bodies of the tissue-fluids, they go through their primary multiplication. Individual cells, of course, find entry into the eye very frequently, but are rendered harmless by the anti-bodies. As a

rule, in infections after cataract-extraction, he thinks it likely that accidental circumstances play the main rôle.

From the foregoing investigations, it may be taken as established that the Elschnig-Ulbrich method is by no means sensitive enough to demonstrate streptococci in all carriers of the germ, and that the streptococci must be present in a considerably higher percentage of conjunctivae than has been hitherto assumed or possible to demonstrate.

Lindner's experience makes him think it probable that streptococci are among the constant guests of the senile conjunctiva. Their non-demonstrability points to the smallness of their number. *Caeteris paribus*, the danger of infection is probably more in culturally demonstrable streptococci-carriers than in patients in whom streptococci are either altogether non-demonstrable or are no more culturally evident, as the result of treatment.

As regards the stand taken up by some, that even clinically clean cases must be bacteriologically examined, and where necessary, given a course of treatment before operation, Lindner would like to point out that it is yet very questionable that in the case of a streptococci-carrier with a clinically clean conjunctiva, the decreased danger of infection due to bringing about a numerical diminution of the germs is not again increased by the artificial conjunctivitis set up by the treatment, and that the patient is not worse off with than without treatment. D. V. GIRI.

(2) **Elschnig, A. (Prague).—The question of prevention of post-operative infections. (Zur Frage der Verhütung postoperativer Infektionen.)** *Arch. f. Ophthal.*, Bd. LXXXIX, Heft iii, May, 1915.

(2) This is a criticism of Lindner's communication of the same name (see above).

Elschnig draws our attention to a foot-note in Lindner's work: "According to the last publication from Elschnig's Clinic, staphylococci appear to be the most frequent cause of hypopyon-iritis, although in the work concerned it is by no means made clear on the basis of what kind of investigation, the aetiological rôle of these germs in the cases concerned could be accepted," and points out that the accusation is not justified, because in Kraupa's publication it is distinctly stated that in eight cases of post-operative irido-cyclitis, the contents of the anterior chamber, and, under some circumstances, the excised iris were bacteriologically examined, and in five of them, small staphylococci were demonstrated, in one case the contents of the chamber proving sterile, while the excised iris harboured staphylococci. Hence, in a number of cases of post-operative irido-cyclitis published, staphylococci have played an absolutely certain aetiological rôle.

Why in these cases the staphylococci have played a greater part than the streptococci, becomes easily intelligible when it is borne in mind that, at the time in question, the procedure in vogue at Elschnig's Clinic was to operate on cataract patients with staphylococci in the conjunctival sacs without any thought or care, while streptococci-carriers were either treated until the germs disappeared, or operated on with special care by Elschnig.

While appreciating Lindner's work, which he thinks confirms the main results of the investigation in his clinic, Elschnig regrets that it is not convincing, at least, from the statistical point of view, if not as regards the whole question of post-operative infection. Having in view that division of cases into infectious (mycotic) and non-infectious on the basis of individual clinical symptoms is unjustifiable, that infection with the same germ can at one time lead to severe suppuration, and at another time to a mild slow inflammation with a benign course—which course the inflammation takes depending on the number and virulence of the germs reaching the conjunctiva, the nature of the nidus they find there, and the general condition of the body—and that it is a long undisputed fact that "attenuated infections" exist, he thinks that Linder ought to have added some, if not all, of the cases of non-exudative iridocyclitis to his list of infections and losses which if it had been done, would, of course, have resulted in quite different conclusions, at all events, in quite other data of losses.

Further, he defends prophylactic treatment of germ-carrying conjunctivae against the accusation that "the conjunctivitis produced by it could again increase the danger of infection that had been diminished by reducing the number of germs." Washing even energetically with 1 : 5000 hydrarg. oxycyan. excites only a short-lived irritation, but no inflammation. Even were an inflammation produced, it would only diminish the probability of infection, not increase it, because the leucocytes and their leukins are valuable means in battling against the bacteria. The intensive irritation which the application of 1 per cent. silver nitrate (carried out two hours before operation in the "not free" cases in Elschnig's Clinic) produces, has never yet produced any damage.

In order to counter other objections that may be raised against the reliability of his statistics, Elschnig draws our attention to the fact that in his Clinic, even in the "free" cases, immediately prior to the operation, the conjunctival sac is flushed with hydrarg. oxycyan. 1 : 10000 as a measure of safety, against the possibility of fresh contamination of the sac between bacteriological examination and operation and against bacteriological fallibility, not to speak of it as a means of freeing the field of operation from mechanically active contaminations, such as dust, mucus, and the rest.

A crowding of patients because of prophylactic treatment need

not be feared; he points out that, at all events, the average period of stay of the patients was shortened because of the non-occurrence of chronic, insinuating, and acute post-operative infections. He thinks it doubtless better from every point of view that the cataract patients should wait a few days for the operation rather than that they should be retained in the clinic unduly long after the operation because of subsequent inflammations.

Elschnig points out that if Lindner's investigation leads one to think that the *technique* of examination employed is not absolutely reliable, it only calls for bettering of the *technique*, and not for abandoning the method. He concludes the criticism by remarking that a contention as to whether it is worth while knowing the germ-contents of the conjunctival sac before operation, is hardly permissible when one remembers, one must know the dangers in order to avoid them!

D. V. GIRI.

CORRESPONDENCE

VISUAL STANDARDS FOR THE BRITISH ARMY

To the Editor of THE BRITISH JOURNAL OF OPHTHALMOLOGY

SIR,—There is a footnote to the report of the Committee appointed by the Council of the Ophthalmological Society to consider :—"The standards of vision desirable for the performance of different duties in the British Army" (see January No. of the BRITISH JOURNAL OF OPHTHALMOLOGY, page 36), as follows :—

"Some military authorities hold that a man, unless he is a sniper, need not see what he shoots at, only sufficient visual acuity being required, aided if necessary by glasses, to enable him to fire in the right direction. This he can do quite well without accurate aiming, and he can shoot from the right shoulder quite efficiently even if the right eye be blind (cf., Germans who shoot from the right hip during advance). If this view prevailed, a complete revision of standards would be necessary."

From numerous conversations I have had with officers from France, and from information I have obtained by testing the sight of men referred to this Ophthalmic Centre, I should be inclined to think that revision is necessary. A consultation such as the Committee suggest, between ophthalmic specialists and military experts is, I feel sure, highly desirable. But the ophthalmic specialists should be selected from men who have had considerable

experience in examining the eyes of men who have returned from the front.

The conditions under which war is now carried on have so changed that I believe the standard of vision suggested by the Committee, and which appears to have been adopted by the Army Council, will exclude from A1 a very large number of men. There must be thousands of men whose vision does not reach this standard who have done very good work in the firing line.

Taking one of my case books containing the reports of 650 men who have been at the front. I find there are 22 non-com. officers whose vision in B.E. is 6/60 or less. These must all have done good work to have been granted their "stripes." There is still a larger number whose vision in B.E. is below 6/24. There is, of course, a very much larger number of men whose vision is equally deficient, but who have not got promotion.

To show what can be done I will give particulars of one man, viz.:

Rfn. G.—R.E. 6/60 c.—3 D. cyl. 10°=6/12 partly.

L.E. 6/24 partly—4 D. cyl. 160°=6/9.

He is a sniper and first class bomb instructor. He tells me that when sniping he took his glasses off, and could make good practice.

The testing of men's sight by types is very fallacious. The real test of a man's limitations can only satisfactorily be carried out by his instructors. The intelligence of a man has much to do with the amount he can see, and mental amblyopia is not very uncommon.

I would make the following suggestions:—

Men with active disease, and very high myopia, should be rejected.

Men who can see 6/60 with B.E. without glasses should provisionally be placed in A. If the sight can be improved with glasses, these should be ordered, and a report sent to the C.O. as to the condition of the man's sight and his probable limitations.

When the army instructors take them in hand, I believe that in actual practice they will be in a far better position to put them into the proper categories than the ophthalmic specialists.

Yours, etc.,

H. H. TAYLOR, F.R.C.S., *Major.*

O. i.c. Ophthalmic Centre of the District of Sussex.

ATROPIN IN CATARACT EXTRACTION

To the Editor BRITISH JOURNAL OF OPHTHALMOLOGY

SIR,—In the December number of THE BRITISH JOURNAL OF OPHTHALMOLOGY you were good enough to publish a short note

of mine in reference to a practice which I had recently adopted in performing the combined operation for cataract, of introducing a drop or two of sterilized sulphate of atropin into the conjunctival sac after the speculum had been inserted, and at once proceeding to make the usual section. The advantages appeared to me to be that, while one was operating on the cataract under quite normal conditions, before the completion of the operation the pupil was observed to be dilating widely and circularly under the influence of the mydriatic, which, under these circumstances, reached the iris in considerable concentration, and it would be found to remain dilated to the maximum extent without further use of mydriatic for the first three or four days of convalescence. I suggested that possibly other operators might be inclined to test the efficacy of this method, and at a later date express their opinions upon it.

In the February number of the Journal, Dr. Ernest Thomson refers to the quite different method of dilating the pupil either on the day preceding or a few hours before the operation. That this method of operating had been adopted by others was well known to me, and I have indeed myself, in years gone by, made a trial of it. It is obviously quite a different method from that which I suggested in my recent note, and in my experience in no way relieved the operator of the necessity of frequent instillations of mydriatic in the days immediately succeeding the operation.

Mr. S. Johnson Taylor in his letter has equally missed the point of my suggestion, and leaves me nothing to answer. He dilates on the question of operating for cataract after dilatation of the pupil with mydriatic; on the value of eserin applied after simple extraction of cataract; on the well-worn subject of the comparative advantages of extraction with and without iridectomy, and finally expresses the opinion that the number of really good ophthalmic operators is small. I do not propose to follow him into any of these interesting fields. When other operators, if they think it worth while, have a practical experience of the idea which I suggested in my article, I trust the BRITISH JOURNAL OF OPHTHALMOLOGY will be able to find space for the expression of their opinions on its advantages or its disadvantages.

Yours, etc.,

J. HERBERT FISHER.

WIMPOLE STREET, W.,
February 4, 1918.

"GUNN'S DOTS"

To the Editor of THE BRITISH JOURNAL OF OPHTHALMOLOGY

SIR,—Your annotation on the subject of "Gunn's dots" in the February number of the Journal seems to me to deny by implication any clinical significance to these dots. As an old clinical assistant of Marcus Gunn, I feel that this should not be allowed to pass without comment. First, it is quite obvious, not only from the false descriptions in text-books, but also from what I have heard in conversation, that many ophthalmic surgeons have never seen these dots. The main reason for this is probably that they have never learned how to look for them. The ophthalmoscope mirror used must be a small plain one and the source of illumination should be a solid flame. Marcus Gunn himself was in the habit of using an Argand burner for the purpose. Most of us, unfortunately, have only electric light in our dark rooms, but one can get a near approximation to a solid flame by turning the grid nearly edgeways on and using the clear glass. By this means one gets a fair approximation to a small solid illuminated area on the retina. The dots can then be seen in appropriate cases as small sparkling spots shining out for a moment just where the dark and light areas meet. They usually show up most clearly, in my experience, below or above the disc close to the vessels, or in the area lying between the main branches above and below. Sometimes they can be seen actually on the surface of the larger vessels.

In questions which depend solely on clinical observations, it is a matter of great difficulty to adduce convincing proofs of the connection between symptoms and signs. The weight we attach to any sign as cause of a symptom must depend on the frequency of the association of the sign with the symptom. I do not for a moment suggest that all cases of intolerance of glare will show Gunn's dots, but I must say that in my own experience I have found these present in a very large number of cases where the principal complaint has been intolerance of glare, and especially so in cases where there has been little or no error of refraction to account for symptoms of eye-strain. In support of my contention, I may be pardoned for citing a case in which I had omitted to note their presence. One August, during Mr. Gunn's absence from town, I was looking after his practice, and a small boy was brought to see me from the seaside. The history was that every summer at the seaside he got headaches and slight attacks of conjunctivitis, and the local doctor had suggested that there must be an error of refraction. I tested the boy carefully under atropin, and found only a very small degree of simple hypermetropia, and I assured the

parents that the boy's eyes were excellent, and that I could not ascribe the symptoms to the small error that I found. Rightly enough, they were not satisfied with my opinion, and Mr. Gunn saw the boy on his return to town. He noted the presence of Crick dots, which I had failed to see because I had failed to look for them, and the protection of the boy's eyes by tinted glasses completely relieved the symptoms. Hardly a summer has passed since then without producing a case almost exactly analogous. As Marcus Gunn always taught, these cases seem to be much more affected by glare reflected from a bright surface, *i.e.*, the sea or sand, or white chalk roads, than by direct light.

Yours, etc.,

LESLIE PATON.

P.S.—One cause for the difficulty many surgeons have in seeing these dots, is the fact that the majority of ophthalmoscopes are made without the small plane mirror.

February 13, 1918.

BOOK NOTICES

Transactions of the Ophthalmological Society of the United Kingdom. Vol. XXXVII. London: J. AND A. CHURCHILL, 7, Great Marlborough Street. Price 12s. 6d. net. 1917.

The thirty-seventh volume of the *Transactions* contains the proceedings of the Society during the Congress held in May, 1917. This volume, which is well illustrated, maintains the high standard that the *Transactions* has led us to expect. It includes the presidential address by Mr. E. Treacher Collins, the Bowman Lecture on "Colour-sense phenomena and some inferences which they seem to suggest" by Sir George A. Berry, and discussions on "Concussion injuries of the visual apparatus" and "The employment of the Blind," not to mention cases and papers of interest to ophthalmic surgeons. These will be noticed in due course in our columns.

Ophthalmological Society of Egypt. *Bulletin of* 1917. Printed by M. Roditi and Co.

This volume (illustrated) of 108 pages comprises the proceedings of the fourteenth annual meeting of the Ophthalmological Society of

Egypt held on March 2, 1917, at the Kasr-el-Aini Medical School, when 46 members were present and 9 new members were elected. It contains nineteen contributions which will be noticed in due course in our columns. The *Bulletin* is written in English, but the text is unfortunately disfigured by numerous misprints.

S. S.

Cataract: Senile, Traumatic and Congenital. By W. A. FISHER. 119 pp., illustrated. Chicago: Eye, Ear, Nose and Throat College. Price, $1.50. 1917.

In this little book the author seeks to show that the intra-capsular method of extracting cataracts of all sorts is the easiest and most satisfactory operation. He gives a full account of the details of Smith's method with some minor modifications of his own. The numerous and excellent illustrations make it easy to understand the description. We venture to think that few British ophthalmic surgeons will agree with several of the author's ideas on after-treatment; such, for instance, as the occlusion of the eye after operation for a period of nine days with a starch bandage over a dressing smeared with 2 per cent. yellow oxide of mercury ointment. Further, he adds that if on the ninth day a prolapse of the iris is found, it should be left alone for a further period of four days and then cut off.

R. R. JAMES.

NOTES

Deaths

WE regret to announce the death of Fergus Menteith Ogilvie, at the age of 57 years, which took place, from pneumonia, on January 17, at his residence, The Shrubbery, Woodstock Road, Oxford, after a few days' illness. He received his medical education at Cambridge University and St. George's Hospital, London. He studied ophthalmology at the Royal London Ophthalmic Hospital and the Royal Westminster Ophthalmic Hospital. At St. George's Hospital he was assistant demonstrator of anatomy and ophthalmic assistant. After leaving London he settled at Oxford in 1899, where his mother was instrumental in founding the "Margaret Ogilvie Readership in Ophthalmology," a post filled by the late Mr. R. W. Doyne. Mr. Ogilvie entered into partnership with Mr. Doyne, and became assistant surgeon to the Oxford Eye

Hospital. Mr. Ogilvie, after retiring from practice, was appointed consulting surgeon to the Oxford Eye Hospital, and was chairman of the house committee of that institution. He was a councillor of the Ophthalmological Society of the United Kingdom from 1910 to 1912. His chief scientific papers were contributed to the *Transactions* of that Society. In 1900 he wrote upon "Holes" in the macula, and in 1906 (with the late Mr. Nettleship) upon "A peculiar form of Hereditary Congenital Cataract," often known as "Doyne's" or "Coppock Cataract." He was an authority upon orchids, which he grew extensively at Oxford, and was widely known in ornithological circles. An enthusiastic fencer, he was president and a generous supporter of the Oxford Fencing Club. He was laid to rest in Wolvercote Cemetery, his grave being lined with orchids. He leaves a widow and one daughter.

We regret to announce the sudden death of Dr. Sulzer, of Paris, one of the editors of the *Annales d'Oculistique*, which took place on February 9 last, from angina pectoris. Born at Winterthur, in Switzerland, he first worked with Horner at Zurich and afterwards with Donders at Utrecht. The influence of the great Dutch master doubtless determined the bent of his mind towards scientific researches, and towards physiological optics in particular. The first years of his medical life were spent in Java, but in 1889 he returned to France and worked with Javal in the ophthalmological laboratory of the Sorbonne in Paris, where he pursued his researches upon the form of the human cornea. He then resided for some years in Geneva, but eventually returned to Paris. On the outbreak of war, despite his 56 years, he joined the French Army, and it is probable that the work he then undertook hastened his death. Sulzer's figure was well known at ophthalmological gatherings, both in France and elsewhere. He wrote several important articles in the French Encyclopedia of Ophthalmology. His knowledge of languages was turned to good account in the *Annales d'Oculistique*.

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Appointments

LIEUT.-COLONEL R. H. ELLIOT has been appointed lecturer in ophthalmology in the London School of Tropical Medicine in succession to Mr. E. Treacher Collins.

Mr. Geoffrey Doyne, son of the late Mr. R. W. Doyne, has been appointed ophthalmic specialist to No. 9 Indian General Hospital, Mesopotamia (Base M.E.F.).

Dr. Francis Guy Antill Pockley has been appointed an honorary ophthalmic surgeon at the Rookwood State Hospital and Asylum, Lidcombe, New South Wales.

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Corrigendum

IN a paragraph on p. 123 of the last number of THE BRITISH JOURNAL OF OPHTHALMOLOGY announcing that Lieut.-Col. R. H. Elliot had been appointed a member of the Council of the British Medical Association, it was stated that he represented the Indian Medical Committee. The word Service should be substituted for Committee.

FUTURE ARRANGEMENTS

	1918	
Midland Ophthalmological Society	April 2	Birmingham
Ophthalmological Society of the United Kingdom	May 2-4	London
French Society of Ophthalmology	May 6th	Paris, 51, Rue de Clichy
Midland Ophthalmological Society	June 4	Wolverhampton
Section of Ophthalmology, Royal Society of Medicine	June 12	London
American Ophthalmological Society	July 9-10	Eastern Point, New London, Conn.
Oxford Ophthalmological Congress	July 10-12	Oxford.